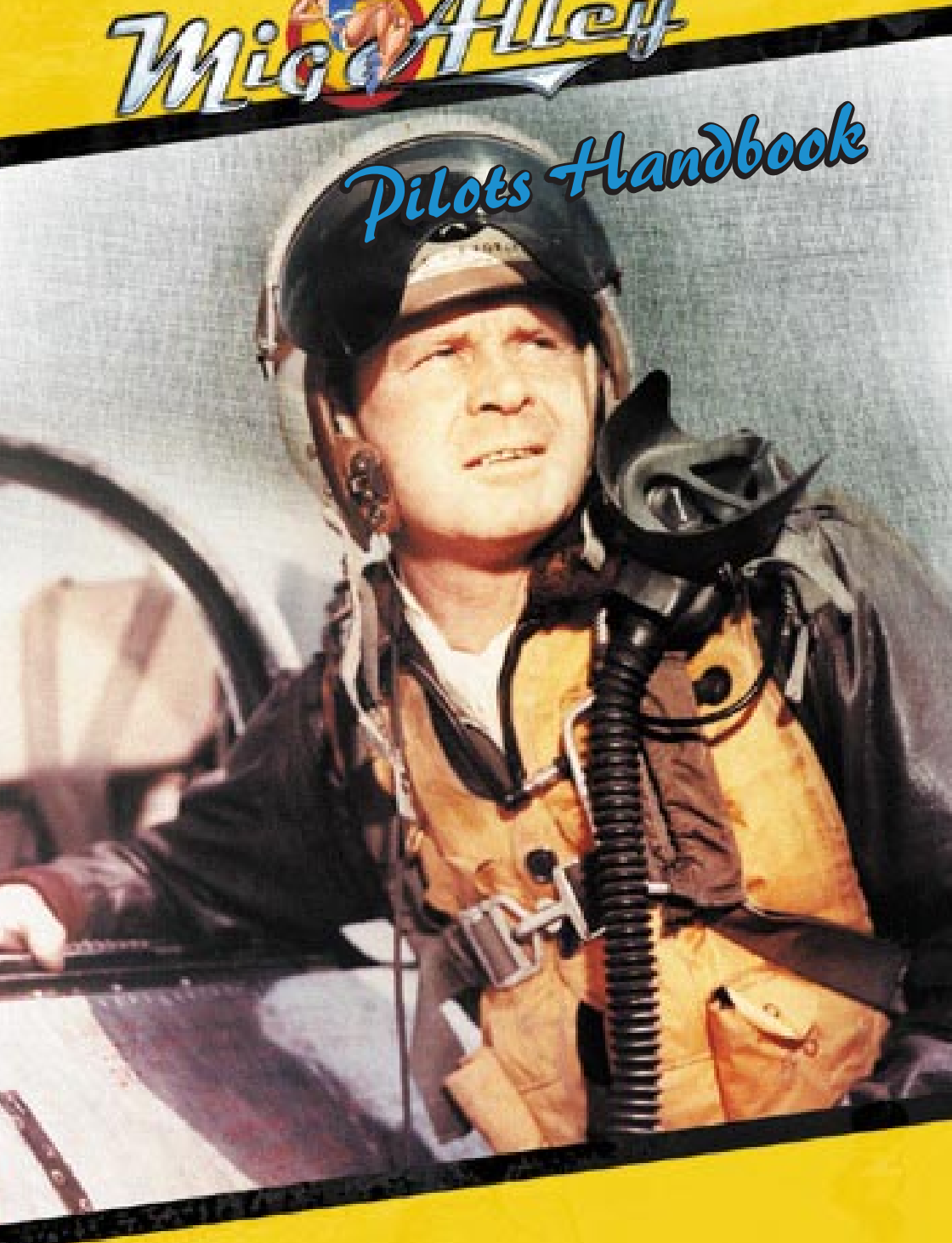
MiG Alley

Pilots Handbook



From the makers of Flying Corps Gold

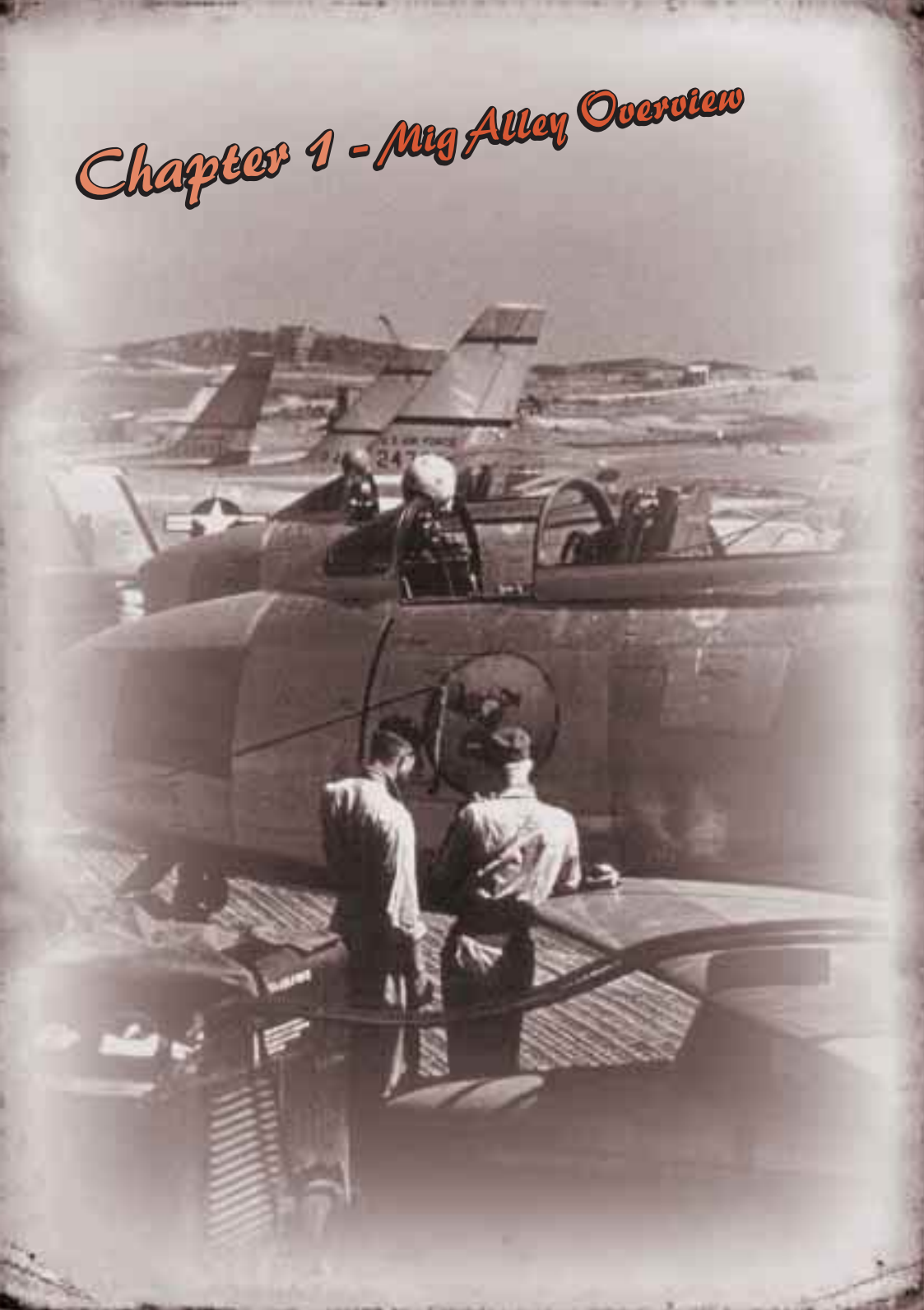
Pilots Handbook

empire INTERACTIVE

Contents

Contents

Chapter 1 - Mig Alley Overview



Overview

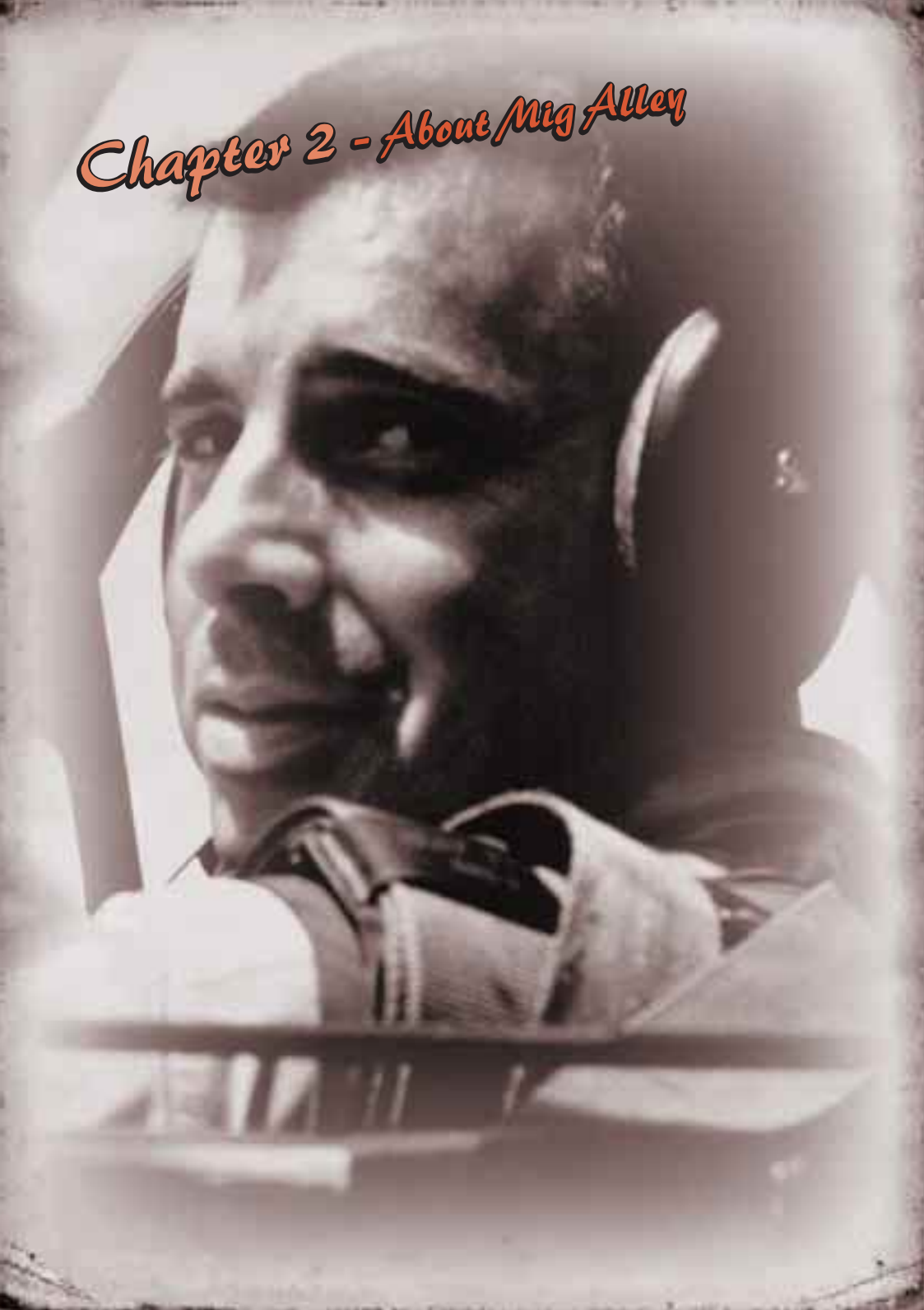
MiG Alley is set during the Korean War, a conflict covering the period between June 1950 and July 1953. The reason why this period is so fascinating is that some pilots see it as the end of one era, and others as the start of another. Pilots in the Korean War found themselves regularly flying jet aircraft for the first time in combat and yet this was one of the final conflicts to rely on air-to-air dogfighting, rather than smart, radar-guided missiles. MiG Alley reflects this reliance on dogfighting. Don't be surprised to find over 150 aircraft battling in the skies around you. It takes guts, determination and a sense of self-control to find and shoot down the enemy, without increasing the percentage of aircraft lost to friendly fire.

While aircraft are central to attacks and defense in modern warfare, the Korean conflict, taking place just five years after the end of Second World War, was still primarily a ground offensive. As a pilot you were expected to play a support role, to remove possible ground threats and restrict enemy troop advancements to nighttime activity.

We think that with MiG Alley you have the best of both worlds. You are rewarded with the ability to fly at speeds approaching Mach one and yet still get to see the whites of the enemy's eyes. You can fly as Lead or Wingman as part of a flight (two airplanes of the same type) taking out targets of opportunity, bombing key buildings and ground forces, using clouds and the sun as your natural defenses.

As a pilot in the United States Air Force, acting on behalf of the United Nations, you must fly in defense of South Korea, initially restricting the onward advance of the North Korean Communist forces, enjoying the support of Russia and China. You will be viciously outnumbered by legions of generally superior MiG fighters, yet with exceptional pilot skill and ingenious tactics the 'Reds' can be thwarted and the invasion halted.

Chapter 2 - About Mig Alley



About MiG Alley

Quickstart

1) Install and start the game after referring to the installation instructions on the CD jewel case.

2) The game starts with an animated title sequence.
Click on the left mouse button to go to the Main Menu screen.

3) Highlight the Preferences option by using the mouse pointer and clicking with the left mouse button. All selections in MiG Alley are made in this way.

4) The Preferences are initially set up for a beginner, so for your first flight you need not make any changes. However you can move around the options to see what is available.

5) Go back to the Main Menu and if you have flown flight simulations before select the Hot Shot option, which allows you to fly a single combat mission. You are in a Sabre escorting Fighter Bombers in enemy airspace. There are some MiGs ahead.
Press F1 to lock onto a MiG.

If you are new to flight simulations, select Quick Mission. This moves you to the Quick Mission Selection Screen. Read about the default mission then click on fly to enter the cockpit.

6) If you wish to pause the game while in flight, press P.
For more information on how your aircraft is performing whilst flying, press I.

7) Use the joystick to control your aircraft's attitude and direction when flying. Pull the joystick back and the nose of the aircraft will rise and you will start to climb. Push the joystick forward and the nose will drop and the aircraft will begin to dive. Moving the stick to the left or right will cause the aircraft to roll in that direction. To turn gently, roll the aircraft into a bank and then ease the stick towards you. Extreme or sudden movement of the stick can cause the aircraft to stall or spin. Use the number keys to control the engine power setting (1 minimum, 0 maximum). See Chapter on Flying for more details on flying.

8) You can end a flight by either landing and coming to a halt, pressing Alt X . . . or by being shot down.

9) Once you are familiar with flying an aircraft try some of the other quick missions.

Hot Shot and Quick Missions

The Hot Shot mission is for quick gratification and as such you have no option to change any parts of it. On the other hand the Quick Missions have many parameters you can play with which give you almost infinite missions to play.

Once you have chosen a mission from the drop down list, you can change:

Flight: Here you can choose to fly in a UN or a RED flight - this affects who you are in the mission. Also choose which pilot you wish to be within the flight, you have a choice of Lead 1 or 2 or Wing 1 or 2.

Target Zone: This affects which target you attack in ground attack missions or fly over. Options include Civilian, Bridges, Airfields, Supply Points, Roads and Rail. Within each one of these Target Zones you can choose a specific target from the next drop down list.

Scenario: By default, the Scenario tick box is selected which gives a brief overview of the mission and what you will be doing.

UN: Click on the UN tick box to modify pilot information within the squadron/flight. You can click on a pilot's face to select the duty you wish to perform during the mission. The Duty drop down list gives you the choice of the flyable aircraft. The number indicates the number of flights in the mission. The Skill setting lets you choose the skill level of all the AI pilots within each squadron - this affects air combat only.

RED: This is a mirror of the UN screen only from the RED side. Use this screen to modify the skill level of your opposing force or choose to fly either the MiG 15 or the MiG 15 BIS.

Chapter 3 - Mission Planning

Entire War

It is June 1950. You take the part of an ambitious USAF career officer who has just managed to get posted to an F80 Squadron in Korea. Almost every officer in the USAF wanted this posting so it wasn't easy. Combat experience is vital for a successful career and Korea is the only war that the Air Force has to offer at present! What swung it for you was the fact that you had experience on all the USAF Front Line fighters.

Your aim is to get combat experience on all the fighter types over the next six months. You want to be the prime candidate when the post of Air Commander becomes available.

In MiG Alley there are five campaigns that together make up the Entire War selection. When you select 'Entire War' from the menu system, the first campaign is presented. Provided that objectives are achieved, each subsequent campaign is presented in chronological order. It is possible for any of the campaigns to go badly with the result that the War is lost.

Campaigns

When you select 'Campaign' from the menu system, you will be presented with a list of the five campaigns. This makes it possible for you to play the campaigns 'one-off' rather than having to play them all in sequence.

Each of the first four campaigns introduces you to a different type of aircraft:

25 Jun 1950 - 1 Aug 1950: **F80C Shooting Star**

2 Aug 1950 - 15 Sep 1950: **F51D Mustang**

18 Sep 1950 - 1 Nov 1950: **F84E Thunderjet**

2 Nov 1950 - 1 Jan 1951: **F86A Sabre**

In these campaigns, you have a specific objective that has to be achieved in a limited number of missions. At this stage the missions are pre-planned for you. However they are presented on the Map Screen and so it is possible to make modifications or even completely remake the missions.

For each campaign, the aircraft type is well suited to the missions defined. Working through these first four campaigns, then, is an excellent way of gaining the experience necessary to succeed in the final campaign.

The fifth and final campaign is the Spring Offensive of 1951. In this campaign you have control of 112 aircraft. You have to design, implement and fly a strategy to complete the overall objective of forcing the Communists back to the Chinese Border.

Spring Offensive

In the Spring Offensive, you take the part of the Front Line Air Commander.

Here is your Command Brief:

1. You are in command of a force of 112 aircraft arranged into seven squadrons.
2. You will design, implement and fly a strategy to complete the overall objective of forcing the Communists back to the Chinese Border.
3. The day is organized into three sessions: Morning, Midday and Afternoon. Missions should be arranged for each session. Up to 96 aircraft can be used in each session.
4. Some sessions will be lost due to bad weather.
5. The full range of Mission Types can be designed. You can either design a mission from scratch personally or just set the overall parameters and let your staff complete the details.
6. You are cleared to fly missions in the following aircraft:
   F86 Sabre, F80C Shooting Star, F84E Thunder Jet and the F51 Mustang.

Mission Planning

Battle Scenario

You are supporting a ground battle that is being fought on the Korean peninsula. As the peninsula runs north-south you will find that the Front Line generally lies east-west. Although your specific objectives will vary from mission to mission, the overall objective is to support the UN ground forces in their effort to move the Front Line up to the Chinese border.

It is possible to support the ground forces by flying Close Air Support missions. This may be necessary when UN Forces are in danger of being over-run. However this is not necessarily the best use of your resources. The Communist ground threat depends on getting supplies to the Front Line. Successful Interdiction Missions can therefore delay a Communist advance and even force a retreat.

For the sake of convenience, three Main Supply Routes (MSR) have been identified. There is one on the West Coast, one in the Central Region and one on the East Coast. Each Communist asset has been allocated to a route so that during briefings you will be able to determine its sphere of influence. Often the sphere of influence is obvious, sometimes, though, because of the mountainous landscape, the connection is not immediately apparent.

It should be noted that the Supply Routes do not operate independently. There are many cross-links that the Communists use to bypass destroyed bridges, etc.

Resources

Your have five fighter squadrons and two bomber squadrons under your command.

The fighter squadrons which are based in Korea, consist of:

Two squadrons of F86 Sabre Jet aircraft. These are the best air combat aircraft at your disposal. Generally, Sabres are armed for air to air duties. However there is a rocket pack option.

One squadron of F84E jets and one squadron of F80C jets. These aircraft are best suited to ground strike duties since they are no

match for the MiG15. Of the two USAF airplanes, the F84E is the more capable. It can be tasked with long range escort and is better in combat.

One squadron of F51 prop aircraft. These aircraft are no match for the MiG15 in combat. However they are useful for Close Air Support and Interdiction Missions close to the Front.

The bomber squadrons are based in Japan. On any particular day you will have either a squadron of B29 heavy bombers or B26 medium bomber aircraft available. B29s are preferable because they deliver a bigger punch. However if the attrition rate becomes too high they will be withheld.

Each squadron of pilots is organized into six flights of four. However, the maximum number of aircraft per squadron that can be launched at any session is sixteen and therefore only four flights can fly. This gives you the option of resting pilots.

Aircraft are allocated in units of four, i.e. in flights. So, for instance, if you have designed four Strike Missions it would be possible to allocate two flights of Sabres to each mission. Alternatively you could allocate one flight to each mission and the remaining four Sabre flights could be allocated together to form a BARCAP over MiG Alley.

A flight consists of two elements of two aircraft. The leader/wingman element is the smallest fighting unit in MiG Alley. Although aircraft are allocated to missions in flights, it is possible to allocate duties to individual elements.

Mission Planning

Missions Generation

Missions can be generated in a number of ways:

- By initiating Directives, the Mission Folder will be filled automatically.
- Clicking on Authorize on either the Target Dialogue or Dossier will produce the framework for a mission.
- On the Mission Results Dialogue click on Redo to carry the highlighted mission over to the next day.

If a mission is marked for Redo, then the aircraft required are automatically removed from the available set before the Directives automatically build the next session's missions.

No matter what method is used for mission generation, the mission can be fine-tuned to an extraordinary level of detail. Use the:

Mission Profile Dialogue to insert and delete Waves.

Task Dialogue to change the aircraft types, numbers, duties and payloads.

Route Dialogue to make changes to the route for the mission.

Mission Structure

Up to 10 completely independent missions can be set up for any particular session.

Each mission can consist of up to six Waves. A Wave is made up of the Strike or Main Duty Group that can be supported by an Air Cover Group and an AAA Group. Each Wave can have its own ToT (Time over Target).

This system gives the flexibility to design either many small missions or fewer complex missions.

Templates or profiles can be produced so that you can easily regenerate missions.

The Mission Structure has been designed to allow you to generate missions that were typical during the conflict. For instance, due to limited fuel capacity, Combat Air Patrol aircraft could only stay on station for about twenty minutes. MiG pilots soon realized this and so they waited until the Sabres started to leave before mounting an attack. In this situation the Sabres were vulnerable because they did not have the fuel to stay and fight and also get home. To combat this tactic Sabres were organized into Waves so that as one Wave was ready to leave another was arriving.

Routes Overview

A route is a set of waypoints. Initially, each route consists of the same standard set of waypoints:

Take-Off

Rendezvous	Flights from different airfields will join up here
Ingress	Entry into enemy airspace
Initial Point	The Groups split at this point to perform their individual duties
Regroup	The Groups join up again
Egress	Exit enemy air space
Disperse	Flights from different airfields split up

Landing

As it is possible to drag waypoints around the map, Ingress and Egress waypoints are not always strictly associated with the position of enemy airspace.

Aircraft in the same Wave fly together from the Rendezvous to the Initial Point. Each Group then has its own set of waypoints to follow in the Target Zone.

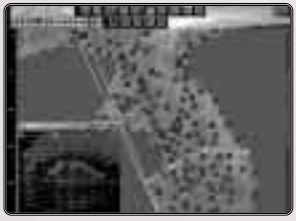
If the AAA and Air Cover Escort aircraft types are the same as for the Main Duty then they will all fly in formation. If the types are not the same then the Escort will fly just below the contrail layer.

It is possible to insert and delete additional waypoints. However it is not possible to delete any of the standard set. Additional waypoints can be added to both the Main Route and Target Zone.

Waypoints can be set for individual elements. If you had a mission with two flights of Flak Suppression aircraft, you could give the four elements different routes in the Target Zone. As it is possible to define Main and Secondary Targets, you could authorize eight different targets with just two flights of aircraft.

The Map

Missions are planned on the Map Screen. This consists of a scrollable and zoomable map, one fixed set of icons and five dockable toolbars:



Title Toolbar

Main Toolbar

Utility Toolbar

Scale Toolbar

Filters Toolbar

On returning from a mission, you will be presented with a debrief stage which can be recognized in two ways:

The Title Toolbar will indicate that the current status is Debrief.

The Main Toolbar will consist of a modified set of icons.

To get to the Map Screen, follow the first two stages of the Spring Offensive Tutorial. Click on the tick on the top right of the Directives Dialogue to accept the computer generated set of missions.

We suggest that you get familiar with the tools available on the Map Screen. Here are some general points about the map:

- On-line help is available by either pressing the F1 key or clicking on the question mark on a dialogue's title bar.
- The Map Screen is presented at your Desktop Resolution. You can therefore get more information on screen by increasing your Desktop Resolution. The 3D resolution is independent of the resolution of the 2D interface.

- The scalable toolbar can be positioned horizontally or vertically. It can be dropped on or off the map. This can be very useful when attempting to estimate ranges. The scale on the toolbar depends on your units setting in the Preferences. Clicking and dragging on the scalable toolbar changes the map zoom.
- If you have a mouse with a wheel, you should be able to use the wheel to adjust the map zoom.
- The Size icon in the top right can be used to toggle the Map between Full and Partial Screen. When on Partial Screen, the Map can be moved by clicking and dragging on the toolbar background. This feature has been provided so that you can access other Windows Applications. For instance, it is possible to use your own editor to make notes during mission planning.

Close Air Support Tutorial

1. Get to the Map Screen

After starting MiG Alley and clicking on the intro animation to terminate it, make the following menu choices:

Single Player

Campaign

2. Pusan Perimeter

Click on Background and Objectives to display the briefing material.

Click on Begin to move to the Map Screen.

2. Enter your Name

You should now be on the Map Screen and the Player Log dialogue should be open. Enter your name and close the dialogue by clicking on the tick in the top right corner.

3. Read the Mission Brief

The Daily Intelligence Summary (D.I.S.) dialogues should be open. Read about the current situation and the mission objectives.

Close the D.I.S. dialogues by clicking on the tick icon at the top right. You should see the mission route and waypoints on the map.

4. Explore the Map Screen

At the top of the screen you will see sets of icons that can be used to gain more information about the mission. For instance, click on the Weather icon to open the Weather dialogue. Each dialogue can be closed using the tick icon. The [?] icon next to the tick can be used to access the on-line help.

At this stage it is not necessary to use any more of the facilities available on the map screen. However, when you come back to fly this mission again, you could try the following:

Open some dialogues:

Bases: Try to move your Home Base.

Squadron:	Access the Paint Shop by clicking on a pilot. Move pilots, elements and flights up and down the roster.
Mission Folder:	Open a Profile and Task dialogue to modify the attack.

Click on some icons on the map:

Waypoint Icon:	Inspect and modify the route.
Target Icon:	Inspect target details.

If you get stuck, don't forget to try the on-line help.

5. Zoom in on the Route

There are a number of ways of zooming in on the map. In this case, we want to keep the route in the center of the screen during the zoom. Here is one method:

Click on the Taegu Front Line icon. This is the dark yellow icon at the bottom of the ring of green waypoint icons. When the Front Line dialogue is displayed, click on the Dossier Button. Now click on the Zoom button repeatedly until the required zoom has been achieved. The advantage with this method is that the route is automatically centered during the zoom. Using a mouse wheel has a similar effect.

6. Go to the Frag

Find and click on the Frag icon on the Toolbar. Frag is an abbreviation for Fragmentary Order. On this screen, you are presented with details about all the missions that you have initiated for the current session.

On this screen you can:

Change the callsign by changing the selection in the callsign combo-box.

Select the aircraft that you want to fly by clicking on a pilot name.

Review the missions as a final check before flying.

By default you have been given the lead aircraft.

7. Fly

Click on Fly to enter the cockpit. You start on the runway with the rest of the flight behind you.

Make sure that you are at 100% Thrust and then release the wheel brakes (, and . keys). There are two ways to take-off in a Mustang:

The easiest is to maintain back pressure on the stick so that the tail wheel does not lift off the runway. When the aircraft is ready it will take off on its own accord. Raise the gear (G key) and fly straight and level so that your flight can get into formation with you. You should reduce the throttle to give them a chance to catch up.

The other way to take-off in a Mustang is to push gently forward on the stick as the speed increases. The tail will lift and you get a much improved forward view. When the tail lifts, the slipstream effect produces a force to the left. This must be counteracted by applying right rudder.

At any point during the take-off you can change to the accelerated mode. There is a range of options, we will accelerate to the Initial Point so that we get to the target area as soon as possible:

Display the cockpit map by pressing the M key

Press the 1 key to display the Accel options

Press the 4 key to accelerate to the Initial Point

The highlighted blue icon that represents your flight will move along the route. The view will be switched automatically to the cockpit view when the Initial Point waypoint has been reached.

FAC RELATED RADIO COMMUNICATIONS

1.	Begin your run	Instruct your flight to start the attack
2.	Lost FAC	Ask FAC to tell you where he can be found
3.	Re-mark	Ask FAC to launch smoke rockets at the target again
4.	Missed	Acknowledge a miss and ask for a Re-mark
5.	More Targets	Ask FAC to give you another target
6.	Leave area	Your flight will stop the attack and get into formation with you

FAC AND TAC

There are two types of Air Controller. The FAC or Forward Air Controller flies a T6 Mosquito. The TAC or Tactical Air Controller is ground based. He was usually an Air Force Pilot on secondment to the Army.

As a FAC can move quickly around the battlefield, one FAC can perform the same duty as many TACs.

From the strike pilot's point of view the main differences between the FAC and the TAC are:

The FAC marks the target with smoke rockets and the TAC uses smoke mortars.

The FAC can be seen flying over the battlefield whereas you will find it difficult to see the TAC's jeep.

8. The Mission

Sometimes the Forward Air Controller (FAC) will not be in visible range when you reach the IP. When this happens the A.I. will automatically contact the FAC, using 'your' voice, to let him know that you have entered the area. The FAC will then give a course and range to fly in order to meet up with him. Turn the aircraft and fly towards the FAC using the given bearing.

When you are close enough, it is possible to get an [F2] padlock view to the T6 Mosquito. The first few [F2] presses will padlock aircraft in your flight because the system locks onto the nearest first but eventually you should get a lock onto the T6. As the T6 is difficult to see at a distance, it is useful to turn on the red diamond that highlights the currently locked item ([D] key).

If you get lost you can ask the FAC for an updated course by using the FAC radio menu:

Press the [R] key

Select [6] FAC

Select [2] Lost FAC

The A.I. will contact the FAC again, on your behalf, when you are close enough to identify him. Follow the FAC to the first target. The mosquito pilot will brief you en route:

> First of all he describes the target type, its location and activity.
>
> Then he warns of any friendlies in the area that you must avoid hitting.

As this mission is during the opening stage of the battle, all enemy forces are travelling towards UN defensive positions and are some distance from them. There is, therefore, little risk of firing on friendlies.

Upon reaching the target, the FAC will ask you to watch while he marks the target with smoke rockets. If you don't see where the rockets go, you can ask him to re-mark by using the FAC radio menu [3] ***Re-mark.***

When the Target has been marked, the FAC will give you the all clear to make a run. He will also recommend what type of weapon to use.

You must then initiate your flight's attack by selecting [1] ***Begin your run*** from the FAC radio menu. The FAC will observe your runs and comment on the hits. You should pay attention to what he says as he is directing the attack.

When the FAC considers that the target is out of action then he will tell you to break off and follow him to another target. Alternatively, if you want to move to another target then you can ask the FAC by selecting [5] ***More Targets*** from the FAC radio menu.

INTELLIGENCE GATHERING

The Map Screen contains information that can be very useful during a Close Air Support mission. It is worth collecting what you can before climbing into the cockpit.

For the Pusan Perimeter Campaign, the D.I.S. describes the general situation.

The dark yellow icons on the Map show the rear supply positions on the UN Line. UN troops will be deployed to the north of the line that joins the icons.

Click on the Taegu Front Line icon to display the Army Report. Click on the Details button to get Intelligence from the Front Line Commanders.

It is time to return to base if there are no more targets or if you have expended all stores. Signal the FAC and your flight by selecting [6] ***Leave Area*** from the FAC radio menu.

9. Return Home and Debrief

You can exit the 3D at any point by pressing [Alt] [X] . The Map Screen will be displayed in a Debrief Mode. The two dialogues will show details about the mission. Other Debrief dialogues are available, refer to the Debrief Toolbar.

When you have finished your Debrief, click on the Next Period Icon on the Debrief Toolbar. It is also possible to move onto the next period by clicking on the Next Period button on the Mission Results dialogue.

Although it is possible to [Alt] [X] when your bombs have done their damage, it is more satisfying to bring your Group back.

It is possible to go home quickly by selecting the Accel to Home option:

Press the [M] key

Select [1] Accel

Select [5] Home

Spring Offensive Tutorial

1. Get to the Map Screen

After starting MiG Alley and clicking on the intro animation to terminate it, make the following menu choices:

Single Player

Campaign

5. Spring Offensive

Click on Background and Objectives to display the briefing material.

Click on Begin to move to the Map Screen.

2. Enter your Name

You should now be on the Mission Planning Screen and the Player Log dialogue should be open. Enter your name and then close the dialogue by clicking on the tick in the top right corner.

3. Cancel the Directives

The Directives dialogue should now be open.

In MiG Alley, missions can be produced in a number of different ways. You can use the Directives dialogue to control automatic generation of missions. The method is described in the on-line help.

For this tutorial, though, we are going to produce a mission manually and so we need to cancel the Directives. This is done by setting both the Fighter and Strike aircraft allocated to zero.

Click on the 32 that represents the Fighter aircraft available and the 64 that represents the Strike aircraft. These numbers are in combo-boxes and so it is possible to open the combo-box and select zero in both cases. In MiG Alley, clicking on the current selection of a combo-box automatically increments the selection. As 32 and 64 are the maximum respective allocations, clicking on these numbers produces a wrap around back to zero.

Click on the tick icon to close the Directives dialogue.

4. Find Wonju Supply Dump Information

It is important that you attack any major build-ups of supplies, especially when they are in close proximity to the Front Line. For this mission we are going to organize a strike against the Wonju Supply Dump. Wonju is the Red's most forward supply base and is supporting enemy operations in the area.

Check that the Front Line and Red Supply filters are on. Find the Map Filter toolbar. When you move the pointer over each filter a hint will be displayed. Click on a filter icon to toggle the state.

Find the Central Front Line icon on the map. There are three dark yellow Front Line icons joined together by a yellow line.

Look to the north of the Central Front Line icon and find the Wonju Supply Dump icon. Click on the icon to display the Intelligence Dossier.

The information contained in the Dossier is vital to planning a successful mission. Look at the estimated threat levels:

> No MiGs are expected near this target
>
> There does seem to be a large AAA presence that you should consider.

AAA accounted for more aircraft losses in the Korean War than any other factor. The Communists often moved their guns around to catch UN pilots unawares and baited Flak Traps with inviting targets.

5. View the Target in the 3D

Click on the Photo button on the Dossier dialogue to get a detailed reconn of the Target area. The zoom and rotate features allow you to extract far more information than was available to pilots during the actual conflict.

Zoom right out so that you can note the key geographical features around the target. This will be useful when you are trying to locate the target during the mission.

CRACK AND BURN

When the mission objective is to destroy supplies, we actually target warehouses. Unfortunately stores were not always effected when a warehouse was hit. To improve their success rate, the USAF developed a tactic called 'Crack and Burn'.

The mission would be split into two Waves. In the first Wave, aircraft would drop heavy bombs to crack open the warehouse. The second Wave dropped napalm to destroy the stores.

HIDING STORES

The Reds became adept at moving and protecting their vital supplies. It was not uncommon for supply crates to be dispersed throughout a large area, hidden under trees or even buried among crops.

6. Decide on Targets

Zoom in on the Supply Dump Icon. At some point more icons will appear around the main icon. Each icon represents a potential target in the group.

Click on the Damage Tab on the Dossier Dialogue and then click in the top combo-box to get a list of these targets. You should see that there are a number of warehouse buildings grouped into small complexes.

The aim of the mission is to destroy supplies. As you don't know which buildings are being used, you will have to destroy as many of the warehouses as possible.

7. Authorize the Mission

To start planning your mission, click Authorize on the Dossier. You are presented with a list of standard profiles that allow you to set up a mission quickly. We want to do more planning from scratch so select 'Minimum Strike'. A more usual choice would be the 'Fighter Bomber Strike' profile which would take Dossier information into account when setting up all the key components of the mission.

The Mission Folder dialogue should now be open. Click on the Profile button to open the Profile dialogue. This shows that we have one Wave consisting of 2 flights of F84s. They are carrying out the main duty of the Wave: bombing.

8. Allocate More Aircraft

Click on the Task button or the Duty Field (F84 (2)) to display the Task dialogue.

The dialogue shows the two flights that are assigned to the bombing duty. There are two methods of adding a third flight:

Click in the Squadron slot (F84(2/4)). This displays a dialogue that shows all available squadrons, their base and flights available. The highlighted line shows the squadron assigned to the current duty and the Flights spin-box at the top allows you to change how many flights are assigned. Close the dialogue.

On the Task dialogue, click in the 3rd flight slot ('Off Duty'). The Payload dialogue opens. Select the 1000lb bombs load and close the dialogue.

9. Change the Attack Pattern

The attack method is currently set to Dive Bomb. This is most effective for fighter-bombers and so we won't change it. However we should change the Attack pattern. We have numerous targets to hit so we need to divide the effort. Select 'Individual Targets'.

10. Change Stores

Make sure that every flight will be equipped with 1000lb bombs.

ATTACK RESTRICTIONS

The following Attack restrictions are imposed automatically:

	Method	Pattern
B29	High	Wide
B26	High	Wide
Or	Low	Wide
Rockets/Guns	Dive	Any but Wide
Bombs/Napalm	High	Wide
	Low	All
	Dive	Any but Wide

Attack Method Definitions

High	Bomb at altitude of the current waypoint
Low	Fly straight and level at an altitude of 100m before releasing stores
Dive	Dive at the target, releasing stores when appropriate

ATTACK PATTERNS

Wide:

Stay in formation and everybody releases their stores on the Leader's instruction.

Single File:

All the aircraft will attack the same target in rapid succession. This is handy when you are attacking a single large target, like a bridge or runway.

Individual Targets:

All aircraft attack at the same time, each concentrating on a different target.

Element Targets:

Again, all aircraft attack at the same time but individual targets are assigned to each aircraft element.

Spaced Target Selection:

Each aircraft makes an individual run while the rest circle. When a target is destroyed, the Group moves on to the next target.

Only one aircraft will be committed to attacking at any one time. So only one aircraft will be at risk from sudden flak barrages.

Spaced Elements:

As Spaced Target Selection, but 2 aircraft make a run at the same time.

Spaced Flights:

Each flight makes a run while the rest circle.

11. Adding Flak Suppression

On the Task dialogue, select the 'AAA cover' tab. No flights have been assigned to this duty. Click the Squadron slot ('Off Duty') to open the Select AC Dialogue. Click on the F84 squadron line and close the dialogue. One flight of F84s is now tasked with Flak Suppression.

Alternatively, you could have selected a different squadron to perform the Flak Suppression duty. It would then be possible to allocate more than one flight. The disadvantage is that the two squadrons would have to spend time attempting the rendezvous. In the mission that you have set up, the four F84 flights will take-off together and get into a perfect formation just after take-off.

Change the weapons for the Flak Duty aircraft to rockets and guns.

HINT

When a mission is going into a heavy flak zone, consider sending an AAA suppression Wave in beforehand.

12. Adding Fighter Escort

The Dossier indicates that the MiG threat is low and so a Fighter Escort will not be specified. You could try to add an escort using similar methods to those defined for Flak Suppression.

13. Modify the Route

Zoom in on the map until the route fills the screen.

Find the Egress waypoint and move it inland by clicking, dragging and dropping it where you want. Generally the Egress waypoint is offshore because this limits the amount of flying over enemy territory. This target is so close to the Front Line that it makes sense to go home directly.

Find the Initial Point waypoint and move it closer to the target. If the IP is within four miles of the target, the target will be visible as soon as you come out of 'accelerate to the IP' mode.

As a result:

The padlock to target view will work immediately,

The rest of the Group will be able to identify their target and begin their attack run as soon as you instruct them to do so.

Find the two AAA waypoints and move them over the target area.

14. Go to the Frag

Find and click on the Frag icon on the Toolbar. Frag is an abbreviation for Fragmentary Order. On this screen, you are presented with details about all the missions that you have initiated for the current session.

On this screen you can:

Change the callsign by changing the selection in the callsign combo-box.

Select the aircraft that you want to fly by clicking on a pilot name.

Review the missions as a final check before flying.

By default you have been given the lead aircraft.

15. Take-off

Click on Fly to enter the cockpit. You start on the runway with the rest of the Flight behind you.

Before you take-off, have a quick look around at the rest of the aircraft that make up the mission. Try the Point of View control on your joystick or the Number Pad keys to move the viewpoint. Try the outside view [F6] and the nearest friendly padlock [F2]. Don't take too long, though, because the Tower wants you moving within a few seconds. You could use the pause key [P] to give you more time but this will disable the PoV controls.

Make sure that you are at 100% Thrust and then release the wheel brakes ([,] and [.] keys). At about 100 knots pull back on the stick and the nose wheel should leave the ground. Take care not to let your tail hit the ground. When the aircraft is ready it will take-off.

At any point during the take-off you can change to the accelerated mode. There is a range of options, we will accelerate to the Initial Point so that we get to the target area as soon as possible:

Display the cockpit map by pressing the [M] key

Press the [1] key to display the Accel options

Press the [4] key to accelerate to the Initial Point

The highlighted blue icon that represents your Flight will move along the route. The view will be switched automatically to the cockpit view when the Initial Point waypoint has been reached.

16. Initiate the Attack

As you are the leader, you must initiate the attack:

Press the [R] key

Select [6] FAC

Select [1] Begin your run

If the target is in sight you will hear "Roger" over the radio. The Group will get into position and then each one will perform an attack run. The Flight assigned to AAA cover will patrol around the area looking for guns to attack.

If the target is not in sight you will hear "Cannot identify target" over the radio. Try again closer to the target.

As you are the leader you should lead the attack, however as this is your first mission it is better to let the Group get on with it. Try to follow the last aircraft down on his attack run. Don't forget to change to bombs ([N] or [ ] key) before pressing the trigger.

If a building contains supplies you may see secondary explosions. Try turning on the impact toggle so that you see the target when your bombs hit. You could also turn on the Gun Camera ([V] key) to record the action.

17. Return Home and Debrief

You can exit the 3D at any point by pressing Alt X . The Map Screen will be displayed in a Debrief Mode. The two dialogues will show details about the mission. Other Debrief dialogues are available, refer to the Debrief Toolbar.

When you have finished your Debrief, click on the Next Period Icon on the Debrief Toolbar. It is also possible to move onto the next period by clicking on the Next Period button on the Mission Results dialogue.

Although it is possible to Alt X when your bombs have done their damage, it is more satisfying to bring your Group back.

After your Group has dropped its bombs it will automatically regroup for a strafing run. Before this happens issue the instruction to leave the area:

Press the R key

Select 6 FAC

Select 6 Leave the area

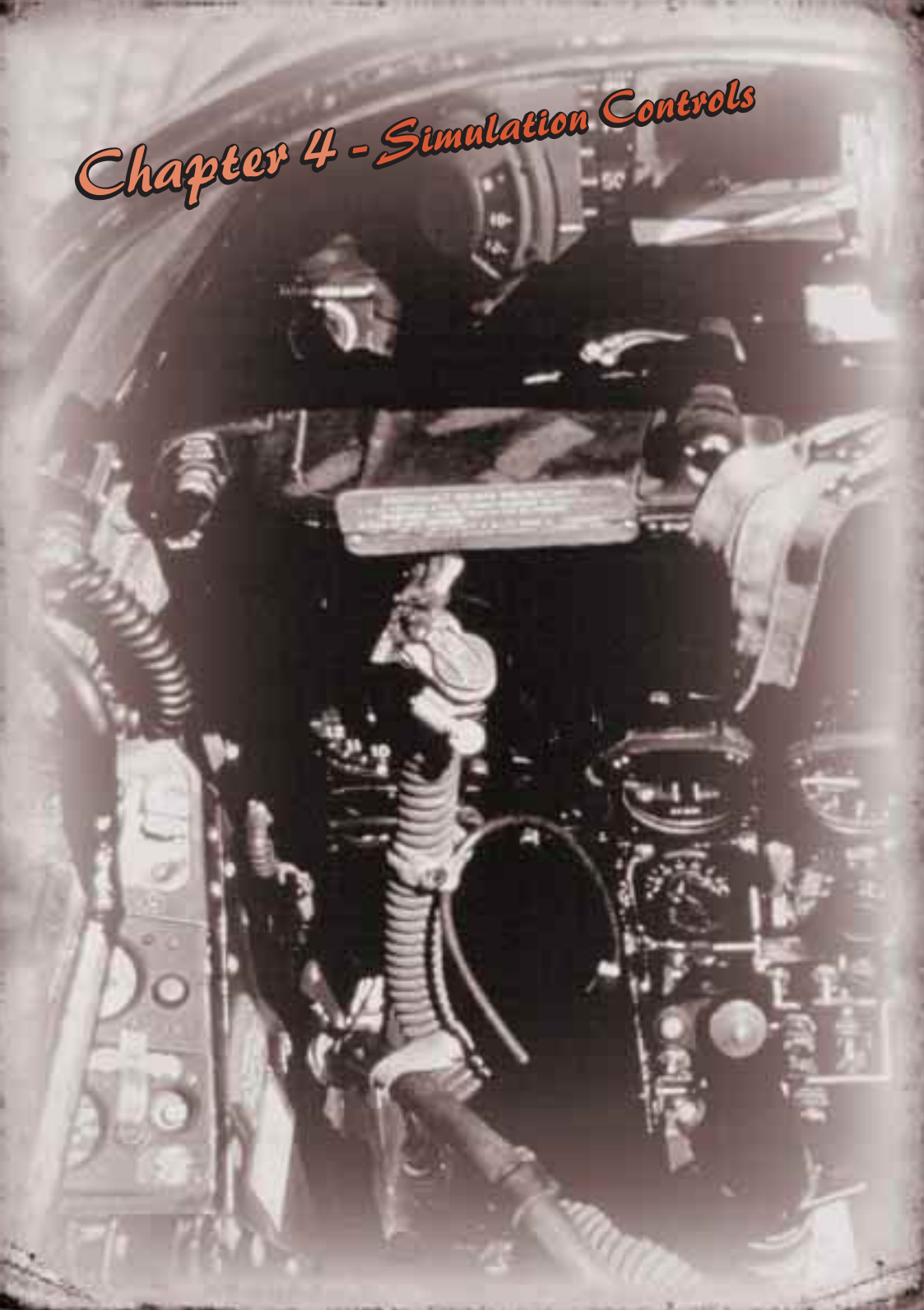
The Group should then attempt to fly in formation with you as you return home. It is possible to go home quickly by selecting the Accel to Home option:

Press the M key

Select 1 Accel

Select 5 Home

Chapter 4 - Simulation Controls



Simulation Controls

Introduction

We have included a comprehensive key guide for you to use whilst playing MiG Alley. Here is a breakdown of the keys used in the game and what they do for you.

Default Joystick buttons

Trigger (Button 1)	**Fire**
2	**Reset View**
3	**Padlock Toggle**
4	**In/Out Toggle**
5	**Trim Forward**
6	**Gun Range Up**
7	**Trim Aft**
8	**Gun Range Down**
9	**Speed Brake**
10	**Reset Trim**

Primary Flight Controls

Control surfaces

The arrow keys can be used for aileron and elevator control. However the use of a joystick is recommended.

MiG Alley uses the Windows joystick configuration and the simulation can be played using the default options. To fine tune control input to MiG Alley go to the Controls Options in the Preferences chapter.

Crude rudder control is provided by the number pad Insert and Delete keys. Much better control is available using dedicated rudder pedals or a twist joystick. The rudder is used to:

Stop spins
Start spins/throw opponent off aim
Side slip
Make slight adjustments to the direction in which you are pointing
Steer on the ground

When taxiing, the rudder can be used to steer the central wheel. The main wheels have individual brakes (, and .). These brakes can also be used for steering.

K and Shift K increase and decrease keyboard sensitivity. If you have to play on the keyboard these keys can be used to set the keyboard up for the current activity. So have low sensitivity (key press gives small control surface movements) for bombing runs and high sensitivity for air combat.

Elevator Trimming

Aft trim key L adjusts the trim of the aircraft by forcing it to pitch upwards.

Forward trim key O adjusts the trim of the aircraft by forcing it to pitch downwards.

The trim can be reset to a neutral position using the Shift L key.

Throttle

All the keys that control the throttle are disabled when an analogue throttle is connected.

The number keys give throttle control from 10-100%. + / − give fine control with changes of 1%.

After landing and taxiing to the holding area, go to 10% throttle and apply the brakes. There is no need to go to 0% throttle.

Propeller Setting

The Mustang is fitted with a constant speed propeller. This means that the pitch of the propeller is automatically adjusted to maintain a fixed engine speed. The Shift F6 key toggles the setting between power (climb/combat) and cruise.

Engine Restart

To restart bring the throttle below 25% and press E .

Others

Speed or Air Brakes	B
Flaps	F
Eject or bailout	Ctrl E
Dump external fuel	Ctrl F
Raise or lower landing gear	G
Left wheel brake	,
Right wheel brake	.

Weapons

Fire	Spacebar
Dump stores	Ctrl W
Previous weapon	[
Next weapon	]
Cycle through weapons	N

Cheat keys

Reload cheat	Ctrl R
Spin recovery cheat	Ctrl S
Lift by 1000ft	U

Game Controls

Screenshot Print Screen Ctrl P

The screenshot file will be found in the stills directory.
Each time a screenshot is taken the number in the filename is incremented. This number is reset each time the game is run.

Exit key Alt X

Info panel toggle (2 types of information) I

Pause P

Accelerated time (stay in 3D) →|

Faster accelerated time (move to map) Shift →|

Detail level change Ctrl D , Shift D

Preferences menu F12

Map M

Box padlocked item D

Gunsight (see cockpit section) Q , W , T , Y

Gun camera toggle V

Gun camera reset X

Any Bandits? A

This generates a message asking where your closest enemy is.

Break Z

This tells one of the pilots in your squadron to make a defensive maneuver because he has an enemy on his tail. Especially useful when you are flying as a wingman.

Clear?/Clear C

If you are flying the lead this key generates an "Am I clear?" message.

If you are flying as a wingman this key generates a "You are clear" message.

Simulation Controls

Viewees

Padlock next nearest enemy	F1
Padlock next nearest friendly	F2
Padlock next nearest ground target	F3
Padlock next waypoint	F4
Padlock subject of message	F5
Turn off padlock	Esc
Padlock previous nearest enemy	Shift + F1
Padlock previous nearest friendly	Shift + F2
Padlock previous nearest ground target	Shift + F3
Padlock previous waypoint	Shift + F4
Reset to nearest enemy view	Ctrl + F1
Reset to nearest friendly view	Ctrl + F2
Reset to nearest ground target view	Ctrl + F3
Reset to next waypoint view	Ctrl + F4
A.I. enemy view	Alt + F1
Escortee view	Alt + F2

Views

Outside view	F6
Inside view	F7
Invisible cockpit	F8
Fly by/chase toggle	F9
Satellite view toggle	F10
Impact toggle	F11
Padlock on/off toggle	Enter
Inside/outside view toggle	←

The outside view can have either a rigidly fixed camera position or a more realistic floating movement. Shift F6 is used to toggle between the two options.

Rotate and Zoom View Keys

The number pad can be used in two modes: fixed view and panning.

The mode can either be selected using the Num Lock key or by making a selection on the Views Options in Preferences.

Panning Mode

Rotate down	Number pad 2
Rotate up	Number pad 8
Rotate right	Number pad 6
Rotate left	Number pad 4
Rotate down & left	Number pad 1
Rotate down & right	Number pad 3
Rotate up & left	Number pad 7
Rotate up & right	Number pad 9

Holding down the Shift key when pressing a rotate view key will accelerate the movement. This set of keys is duplicated on the main keyboard using Alt and the number keys.

Fixed Mode

Back	Number pad 2
Forward	Number pad 8
Right	Number pad 6
Left	Number pad 4
Back & left	Number pad 1
Back & right	Number pad 3

Simulation Controls

Forward & left	Number pad 7
Forward & right	Number pad 9
Move one view to the left	Number pad /
Move one view to the right	Number pad *

This set of keys is duplicated on the main keyboard using Ctrl and the number keys. This duplicate together with the one for the panning keys is provided to allow users to have both sets available at the same time.

Rotate and Zoom reset	Number pad 5
Zoom in	Number pad +
Zoom out	Number pad −
Field of View zoom in	Ctrl and number pad +
Field of View zoom out	Ctrl and number pad −

Sticky Keys

There are 6 sticky view keys. They are sticky in the sense that the view is only available when the key is pressed. On releasing the key the previous view is re-shown. These keys are useful for quickly checking a part of the screen. For instance the End key will give a quick view of your 6.

Forward & left	Insert
Forward	Home
Forward & right	Page Up
Back & left	Delete
Back	End
Back & right	Page Down

Scroll Lock gives a look up view shift for the sticky keys.

Miscellaneous

Heads up instruments toggle. H

See Virtual Instruments in Cockpit section.

In Team Play and Death Match comms, when a player is shot down the aircraft can either spiral to the ground or be blown to pieces. If you are spiraling to the ground, you can press the suicide key to cut short the sequence S.

The dead aircraft is resurrected on the ground and it is then elevated until it reaches a set height. The player can then take over the controls again. This process can be shortcut by pressing the J key. The aircraft jumps to the regeneration stage and the player can take over immediately.

Radio Communications

It is possible to initiate radio communication with the rest of your group, the Tower, The Forward Radar Controller and the Forward Air Controller (FAC).

If there is anybody out there you should get a response, otherwise you will hear white noise.

The Tower operators can give weather updates and a home vector. They will respond to MayDay calls.

The Forward Radar Controller, whose callsign is Dentist, is located on one of the North Korean Offshore islands under the UN Control. Dentist is able to give general information about MiGs. Sometimes he will volunteer information. By initiating radio contact you can ask him about the current situation.

The Forward Air Controller will direct you when you are engaged in close air support missions.

Press the R key to initiate contact. A menu will be displayed:

Group Info	Get information back from the aircraft in your group
Precombat	Messages associated with precombat
Combat	Messages associated with combat
Postcombat	Messages associated with postcombat
Tower	Communicate with Tower
FAC	Communicate with Forward Air Controller

Comms Player	Select a player to send a predefined message to
Comms Msg	Send the pre-defined message

Make a selection using either the number keys or the mouse pointer. A second menu of possible messages is then presented. For instance, if Tower was selected then the following options are available:

MayDay	Send out a MayDay, the nearest tower will respond
Home Tower	Request a vector to the home airfield
Nearest Tower	Request a vector to the nearest airfield
Surface Wind	Request surface wind info
Wind at 35,000ft	Request wind at 35,000 ft info
Land at Home	Request clearance to land at home field
Land at nearest	Request clearance to land at nearest field

Make a selection and a message will be sent out from your aircraft. If you have radio chatter enabled then you should hear the message. If the info line is enabled you should see the message printed at the bottom of the screen.

There are also short cut keys to the secondary menus:

Group Info	Shift 1
Precombat	Shift 2
Combat	Shift 3
Postcombat	Shift 4
Tower	Shift 5
FAC	Shift 6

Strike Mission

The following messages in the FAC menu are available for Strike Missions even when the FAC is not available:

Begin your Run	Instruct your Group to start its bombing run
Leave Area	Instruct your Group to regroup and leave the area

Chapter 5 - Flying

Basic Flying

The best way to learn about flying the aircraft in MiG Alley is to fly some missions. The first two Quick Missions do not feature any MiGs and so it is possible to concentrate on flying rather than fighting.

Preparation

Before starting MiG Alley, check that your joystick is properly configured using the standard Windows configuration procedures. Access the Games Controller dialogues off the desktop to start the procedure.

On starting MiG Alley, click on the intro animation to move to the Main Menu. Move to the Quick Missions screen by making the following menu choices:

Single Player

Quick Mission

Landing/Take-off is the default mission so you can get to the 3D by clicking on Fly.

Straight and Level

CHECK THAT YOU ARE AT 100% THRUST.

The easy way to do this is to press the [I] key to get up the Info bar. The [I] key can be used to toggle between a number of options. You want the line that gives the flight data, this includes the % Thrust.

A more realistic method is to use the number pad keys or the Point of View control on your joystick to move the view down to the Instrument Panel. You then need to find the Thrust instrument.

If you have a joystick throttle then push it to its limit to find the 100% point. Otherwise use the number keys to change the thrust setting.

Please note that changing the thrust quickly can damage your engine if you have realistic "Spool Up" selected in the Preferences section.

CONTROL THE RATE OF CLIMB

As the speed of the aircraft increases, the extra lift will mean that the aircraft will start to climb. This can be controlled by pushing forward on the stick.

The rate of climb instrument is very useful when trying to fly at constant altitude.

In real life, flying straight and level is one of the first skills that you have to master when you start flying lessons. It is much more difficult in a Sim because you get less feedback. Fortunately it is not necessary to master straight and level flying to enjoy combat sim flying.

If you want to set up your aircraft to fly straight and level for a long period then you will find the trim keys useful. These keys simulate the trimming system of a real aircraft by providing elevator input even when the stick is in the center position. There is a trim key reset to zero the effect of the trim keys.

GET FAMILIAR WITH THE INSTRUMENTATION

Use the Point of View control or the number pad keys to move the view around the Instrument Panel. As previously stated the Rate of Climb instrument is useful when attempting to fly straight and level. Pick out the speed and altitude dials and watch the movement of dials during your straight and level flight.

During combat you won't have much, if any, time for instruments. However the following are important:

Speed
Altitude
Fuel
Ammo count

TEST THE SECONDARY CONTROLS

Notice the effect of the following controls on speed, climb and altitude.

[F] key for flaps

[B] key for air brakes

[Ctrl] [F] key for dumping external tank

[G] key for gear

Most controls have indicators in the cockpit. By going to an external view [F6], you can see the effect of the controls on the aircraft.

Gentle Turn

Roll the aircraft to get it to turn. Start with a roll of 45 degrees and then adjust with the ailerons until the Rate of Climb is zero. If the aircraft is losing altitude then reduce the roll. As you are trying to set up a gentle turn, use the elevator sparingly. It is easy to black out if a turn is attempted from a high Mach straight and level run.

During the turn look at the g dial and avoid exceeding 3g.

Break Turn

Check that g effects are enabled on the "Others" sub-section of the Preferences Section.

Gentle turns are all right for maneuvering around Home Base but something more vigorous is required during combat.

Starting with a high Mach straight and level run, roll the aircraft to about 90 degrees. The aircraft will start to lose altitude. Pull back gently on the joystick. The screen should start to black out as the g is sustained over about 7 and "your" heavy breathing should be heard. Ease back on the stick to maintain vision and watch the speed dissipate. If you are losing altitude too rapidly, unroll the aircraft slightly.

The U key is very handy during these training sessions. Press U to increase altitude by 1000ft.

Continue to stay on the edge of blackout. As the speed drops you will be able to pull further on the stick and turn tighter. Eventually the aircraft will start to shake. You will be able to hear the buffeting and if you have a Force Feedback stick you will be able to feel the vibration.

The aircraft is now on the edge of a stall. Try to maintain this position.
You need to learn how to recognize the situation because if you pull back any further the aircraft will stall and probably enter a spin.

Spin Recovery

Perform a break turn as described in the previous section but this time when on the edge of the stall pull back on the stick and enter a spin. You can usually maintain the spin by pulling the stick back to its limit.

To recover from the spin, release the stick so that it returns to its central position. Then apply rudder in the opposite direction to the spin of the aircraft. When the spin stops, release the rudder and gently pull back on the stick to stop the dive. Too harsh a movement of the stick at this stage can result in the aircraft re-entering the spin.

If you don't have rudder pedals or a joystick with a twist grip then you can use the keyboard rudder keys to stop the spin. Shift [S] can be used to stop the spin if all else fails.

MiG15 vs F86 Sabre

Chuck Yeager once said, "The pilot with the most experience is going to whip your ass, no matter what you are flying- it's that simple."

Yeager had just proven his point by beating a Lieutenant Colonel in two dogfights. In the first Yeager had the MiG15 and the Colonel had the Sabre.
In the second the pilots swapped aircraft. The result though was the same: Yeager stuck to the tail of the Colonel as if he was attached by glue.

Background

The first jet v jet combat took place over Korea on 8 November 1950. Lieutenant Russell J. Brown flying an F80C "Shooting Star" shot down a MiG15 which was one of a flight of four that had dashed across the Yalu. Despite this first success, it was soon apparent that the "Shooting Star" was no match for the MiG. With a speed advantage of over 100mph, the MiG was able to evade the F80C with ease and attack the B29 bombers tasked with bombing missions on the Chinese Border.

The two straight winged USAF jet fighters, the F80C and the F84E, were relegated to strike missions. Along with the F51D, a veteran from the Second World War, these aircraft took on the ground attack missions: the grunt work of the war. In MiG Alley, if you get caught by a MiG when you are flying one of these aircraft, life could get very difficult.

It was left to the swept wing F86 Sabre to face up to the MiG and grab the glory.

Flying

The MiG15 and the F86 are very similar in design. They are both all-metal, single seater monoplanes powered by a single turbojet with the wing swept back at 35 degrees and swept tail surfaces.

However there are differences that the experienced and knowledgeable pilot can use to ensure that he always ends up on top no matter what aircraft type he is allocated.

"Some of the advantages were the efficient General Electric J47 axial flow engine for long range, extra large external fuel tanks, the capability of supersonic fight, fast firing machine guns for dogfights, a radar gun-sight, better environment in the cockpit, the cockpit's large dimensions, orderly placement of gauges and controls, crystal clear canopy, an advanced hydraulic control system with a controllable horizontal stabilizer for superior maneuverability, stall warning system, advanced radio, rear view mirror and a better view for the pilot. It was like a Cadillac compared to the family Chevrolet."

No Kum Sok (North Korean Pilot who defected and brought a MiG15 with him) talking about the Sabre

Variants

MiG15s were available to the Communist forces very early in the Korean War. In 1951, a more powerful version, the MiG15bis appeared in Korea.

The first F86A Sabre mission over Korea took place on 17 December 1950. One MiG out of a flight of four was shot down. On 22 December 1950, the MiGs shot down a Sabre, but later that day six MiGs out of a flight of 15 were destroyed.

The E was the next variant to enter active service in Korea. The only difference from the A was the "all-flying" tail. In this modification, the horizontal stabilizer pivoted on its rear spar so that the leading edge moved up and down with the normal action of the elevator controls. The "all-flying" tail eliminated the undesirable compressibility effects of the F86A. Recovery from supersonic dives was much easier.

The F86E first saw action in Korea with the 4th Wing in September 1951.

The F86F reached Korea in June and July 1952. Essentially the F86F was an F86E with a more powerful engine. In September 1952, the 6-3 wing modifications were fitted to F86Fs in the field. The 6-3 wing modification consisted of adding 6 inches to the leading edge of the wing root. The extension tapered to 3 inches at the tip. In addition the leading edge slats were removed.

The F86F could out-turn and out-run the MiG15bis. However for most of the war, it was the MiG that enjoyed the performance advantage.

Fighter Tactics

When two different types of aircraft are engaged in combat, it makes sense for the pilots to attempt to force the conflict in a direction that suits their type of aircraft. During the Korean conflict there were no missiles available and so it was necessary to get in close to make a kill. Generally speaking,

in these circumstances, the aircraft with the larger thrust to weight ratio will have the advantage.

The MiG and the Sabre were capable of delivering similar thrust, but because the MiG was much lighter it had a significantly higher thrust to weight ratio. This meant that the MiG could out-climb and out-accelerate the Sabre.

Curiously though, the Sabre had the higher top speed up to an altitude of 30,000ft. The MiG had a higher wing thickness to chord ratio compared with the Sabre and the higher drag resulted in a lower top speed in level flight and more importantly in the dive. In fact the MiG could not go supersonic in the dive whereas the Sabre could.

The MiG service ceiling was much higher than that enjoyed by the Sabre. The MiGs were able to bypass fighter screens by flying high. MiGs could choose when to fight.

With the higher thrust to weight ratio and lower wing loading, the MiG should also have demonstrated the better turn performance. In fact performance was compromised by the MiG's poor stalling characteristics. During combat, the aircraft would suddenly stall and the inexperienced pilot could not avoid the aircraft going into an uncontrollable spin.

The Sabre wing had a torsion box type structure which prevented wing flexing. The MiG's wing construction was not as stiff and the MiG suffered badly from wing flexing. In addition, the variation in MiG wing manufacturing quality was wide. These factors are likely to have contributed to the poor stalling characteristics of the MiG.

The result of the MiG's poor stall characteristics was that average and inexperienced pilots were uneasy about pushing the aircraft to the limit and hence the Sabre pilot sometimes had the edge in a turning contest.

The MiG armament only exacerbated the situation. As the MiG was fitted with large bore slow firing canons, the MiG pilot had to pull far more lead in a turning fight compared with the Sabre pilot. As a result the Sabre pilot found it easier to get a gun solution than did the MiG pilot. To compensate for this

shortcoming the size of the MiG's canon shell was such that usually just one hit was enough to destroy a Sabre. On the other hand, there are many reports of MiGs getting back to Home Base even though they were riddled with Sabre bullets.

The Sabre's high roll rate gave it a significant advantage in close-quarters air combat that required a high degree of maneuverability. While the Sabre could achieve roll rates of 180 degrees per second at all speed ranges, the MiG could only approach rates that were half to two thirds as good. In addition, roll rates deteriorated significantly for the MiG at higher speeds.

In fact the Sabre was generally more refined and controllable with no tendency to yaw. Overall, the Sabre was the better aircraft for a turning fight, but an experienced and skilful MiG pilot could swing the balance into the opposite direction.

Combat

The differences between the two aircraft determined the tactics during combat.

MiG pilots tended to fight in the vertical. They would choose the moment of engagement and then swoop down in a slashing attack and then zoom back to a safe altitude. MiG pilots could control the separation by use of the vertical, better climb and acceleration rates.

Sabres preferred to engage in turning and diving fights. The lower the altitude, the less the performance advantage enjoyed by the MiG.

However an aggressive and skilful MiG pilot could take on the Sabre. There are many reports of MiGs forcing the combat and ending with a duel at ground level. In MiG Alley, you will find that this type of engagement is the rule rather than the exception.

The MiG could out turn the F-86 at any altitude, but above 25,000ft had an increased ability to do so. It would also out climb the F-86 (which was heavier) at any altitude but had more than double our rate of climb above 25,000ft. We got more kills because we were better trained and more aggressive.

Boots Blesse

IDIOSYNCRATIC BEHAVIOR

MiG and Sabre

At high incidence, an uncommanded pitch up is observed due to stalling of the wing tips. If the pilot takes no action to compensate for this, it can cause the aircraft to pitch up into a stall or spin.

At high speeds, control power decreases due to the presence of sonic flow in the region of the control surfaces.

MiG

The MiG has poor yaw stability and it takes a number of cycles for any disturbance in yaw to die away. This is more significant at high angles of attack.

The MiG has anhedral wings which causes the aircraft to roll the opposite way to the direction in which rudder is applied.

At high speed and low altitude, a MiG wing can get heavy due to wing tip stalling and this leads to an uncommanded roll. When this occurs, there is generally insufficient aileron power remaining to level the wings.

THRUST TO WEIGHT RATIO COMPARED WITH MODERN JETS:

F86E	1 : 2.8	F80C	1 : 2.6
MiG15bis	1 : 2	F84E	1 : 3.5
MiG15	1 : 2.2	(F15E	1 : 1.9 without afterburner)
		(F16C	1 : 1.8 without afterburner)

SUMMARY OF THE DIFFERENCES BETWEEN THE MIG AND THE SABRE:

- The MiG can out-accelerate and out-climb the Sabre at all altitudes
- Better sustained turn rate on the MiG
- Roll rate of the MiG is half/two-thirds that of the Sabre
- The Sabre is generally more maneuverable
- The yaw stability of the MiG is much lower than the Sabre
- Maximum Altitude is higher on the MiG
- The Sabre has a higher top speed at sea level and in the dive
- The MiG's shells were slow and heavy in comparison with the Sabre's. One hit from a MiG was generally fatal.

Specific Power Curves

Specific power is defined as the rate of change of specific energy and it is used to measure the ability of an aircraft to change its state. The idea of specific power was developed during the 60s as part of the famous Top Gun program. In the early stages of the Vietnam War, USAF pilots were not doing as well as they did during the Korean War. Pilots were sent to the Top Gun School and results improved significantly.

Pilots were introduced to the concept of energy maneuverability. They learnt how to measure and manage energy during air combat. As these theories were not developed until the 60s, specific power curves do not exist for the Classic Jets of the 50s. The curves presented here are generated from the MiG Alley Flight Model.

THE EQUATION

Specific Power (Ps) = v. (T - D) / W

Where:
T is thrust
D is drag
W is weight
v is velocity

T, D and W should all be in the same units of force.

Velocity is usually defined in feet per second. This means that Ps is also in units of feet per second.

When the Ps = 0, the thrust balances the drag exactly and it is possible for the aircraft to sustain its conditions. A positive Ps can be used to either increase the height or the speed of an aircraft, e.g.:

If Ps = 100ft/s, then the aircraft can climb at 100ft/s or 6000ft/min.

If Ps = 100ft/s and v = 600ft/s, then the aircraft is capable of an instantaneous accel:

accel = Ps.g / v = 100 x 32.2 /600 = 5.4 ft/s/s

"Flying the MiG15 is the most demanding situation I have ever faced. It's a quirky airplane that's killed a lot of its pilots." In his book he writes, "Man that thing was a flying booby trap, and nobody would be surprised if I got killed."
Yeager (US test pilot. First man to break the sound barrier)

"A light plane with a big engine."
General Albert Boyd said about the MiG15

It is very important to realize that the Ps calculated is for a point condition. As soon as the altitude, weight or velocity changes, then a new Ps must be calculated.

A negative Ps cannot be sustained. Either the velocity will drop or the aircraft will have to lose altitude.

THE CURVES

Specific Power curves have been produced for the MiG15 and the F86E Sabre for altitudes of 20,000ft and 30,000ft.

It is usual for the specific power curves to be bounded by the physical limitations imposed on the aircraft:

- The left side is bounded by the lift limit line. The aircraft cannot generate sufficient lift to sustain a position on the left of this line.
- The top boundary is set by the maximum g that the aircraft can tolerate.
- The right boundary is set by the maximum speed that the aircraft can achieve.

For the classic jets the airframe was rated at 7g. In fact there were reports of 10g being reached without serious consequences. This seems reasonable because a 50% tolerance is usually built into the figures. Inspection of the Specific Power curves show that the aircraft are very much under powered and so the g limit is largely irrelevant when considering performance.

The Classic Jets were not capable of exceeding Mach one during level flight. There is then an invisible barrier to the right! The MiG was not capable of exceeding Mach one even in a dive. However the Sabre could and so it is likely that at some very large negative Ps the curve will exceed the speed of sound.

For the Classic Jets, only the lift limit line has any practical significance and so it is the only one drawn in the diagrams.

GENERAL INTERPRETATION

Maximum Instantaneous Turn Rate

This occurs at the intersection of the lift limit line and the maximum g line (7g):

F86E at 20,000ft 17 deg/s at 0.72M

MiG15 at 20,000ft 18.4 at 0.67M

In practice this condition is very difficult to achieve. If a break turn is initiated at high speed, then the speed bleeds off quickly and will be below 0.6M before the maximum turn has been achieved.

The Specific Power diagrams show how it is possible to rip the wings off a Classic Jet. When an aircraft is travelling at low altitude and near to Mach one, a sudden roll and pull will result in experiencing g forces in excess of 10.

The Maximum Instantaneous Turn Rate is lift limited and cannot be sustained.

Maximum Sustained Turn Rate

The maximum sustained turn rate, which depends on available thrust and the drag on the airframe, is obtained by finding the maximum turn-rate on the Ps = 0 curve.

F86E at 20,000ft	8.2 deg/s at 0.39M
MiG15 at 20,000ft	10.0 deg/s at 0.40M
F86E at 30,000ft	5.2 deg/s at 0.53-0.65M
MiG15 at 30,000ft	6.2 deg/s at 0.42-0.50M

It is important to realize that a pilot does not necessarily fly his aircraft at this condition by pulling back hard on his stick and flying the lift line. Inspection of the diagrams shows that the F86E pilot flying to the lift line at 30,000ft will only achieve a turn rate of 4.6 degrees/ sec and he will have slowed down to about 0.40M. He will be flying at the point where the Ps=0 line intersects the lift limit.

It is easier for the MiG pilot to fly the sustained turn rate at 30,000ft because the sustained turn rate coincides with the lift limit line. However the curve is flat and so he could maintain the same turn-rate at speeds up to 0.5M. In some instances during combat, increasing the speed without a drop in turn-rate could be very important. The downside is that there is an inevitable increase in turn radius.

Minimum Turn Radius

Turn radius lines are displayed on the diagrams. The minimum turn radius is obtained by drawing a line from the origin that produces a tangent to the lift limit line.

On the F86E at 20,000ft, the minimum radius is between 2500-2000ft.

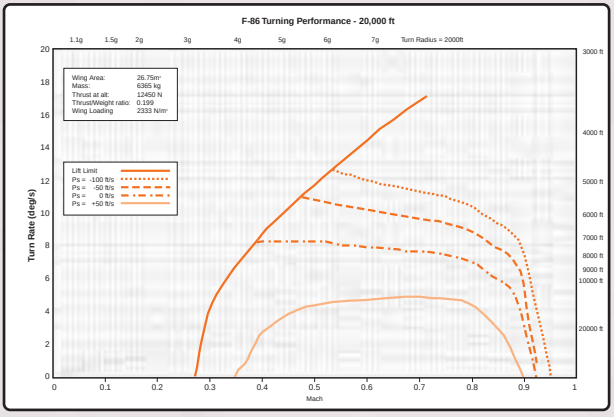


Fig 1: F86E, 20,000ft

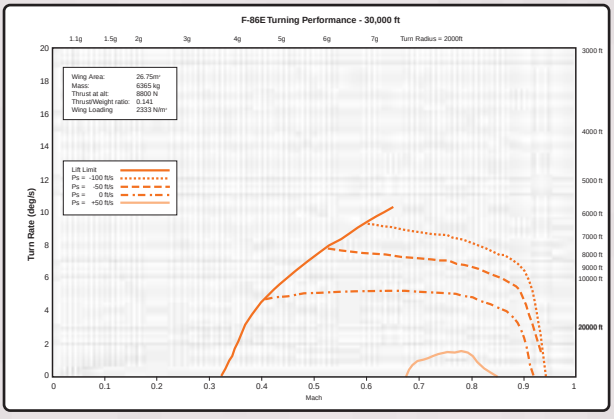


Fig 2: F86E, 30,000ft

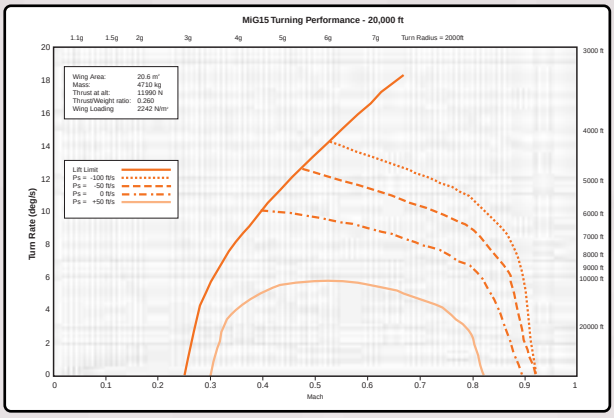


Fig 3: MiG15, 20,000ft

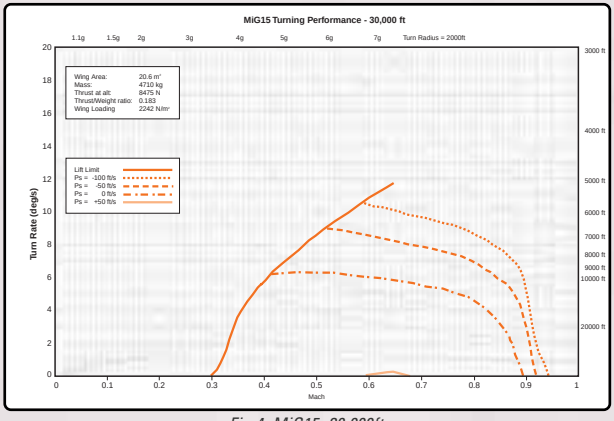


Fig 4: MiG15, 30,000ft

USAF Group Tactics

Organization

In MiG Alley, on the UN side, a mission consists of a number of Waves of aircraft. Each Wave has a Main Duty Group that is optionally supported by a Flak Suppression Group and a Fighter Escort Group. So, for instance, if the Main Duty Group is tasked with bombing facilities near to the Chinese border, it will almost certainly be supported by Fighter Escort and Flak Suppression

Groups. This mission would be designated as a Strike Mission because the objective is to destroy a ground target. When a target has a very high priority and is well defended then all aircraft may be allocated against it. This would then be considered to be an Alpha Strike Mission. On the other hand, near the Front Line, where there is likely to be little MiG activity a Fighter Escort Group may not be necessary.

It is also possible to set up Combat Air Patrol missions that do not have a target. In these cases the Main Duty Group is BARCAP which stands for BARrier Combat Air Patrol. Typically F86 Sabres are sent up to MiG Alley to patrol the Korean-Chinese border. Their objective is to provide a barrier between the China based MiGs and the UN Strike Missions.

Although there are many different types of mission, aircraft are always allocated in Groups. A Group can consist of up to four flights of aircraft with four aircraft in each flight. During mission planning, flights are never split and Groups can only consist of one type of aircraft.

Welded Wingman

A flight consists of two elements of two aircraft and an element consists of a leader and a wingman. During combat it is normal for the two elements to lose contact with each other. However the smallest fighting unit is the element and it is unacceptable for the wingman to lose contact with the leader during combat.

When a leader is in combat, he needs to know that there is somebody acting as lookout to ensure that he is not taken by surprise. This is the job of the wingman and to be successful he needs to:

Make sure that he does not get separated
Keep a good lookout.

The Alt F2 view is very useful when flying wingman because it provides a locked view to the element leader.

MiG Alley Group Comms

In MiG Alley, if you are flying lead, you can use the C key to initiate a'Clear?' message. If radio chatter is enabled on the Others section of Preferences then you should hear "your voice" say something like 'Am I

clear?' or 'I'm padlocked.' 'I'm padlocked' means that you have spotted a MiG and you are engaging it. The wingman should respond by saying that you are or are not clear.

If you are flying wingman you can use the C key to tell your leader that he is clear. The Z key issues a break call.

The 'Any Bandits' call, which is initiated by pressing the A key is the third short cut comms key. All other radio communications are available via the menu system that is activated using the R key. If you are flying as Group Lead and you have selected Auto Vectoring Off in the Preferences, then you get the option to choose initial tactics when you come into combat with the enemy.

Text versions of the radio messages are displayed if the Info Line is activated. This can be initiated either by pressing the I key or making the appropriate selection in the Preferences.

MiG Tactics

North Korean, Chinese and Russian fighter Groups were available to the Communist Forces. Skill and morale levels varied greatly, however during the war tactics did evolve. Fortunately for the USAF, the MiG Groups rotated every few weeks and the new Group would always start carefully.
While some Groups remained cautious, others developed the aggressive tactics described below.

The Communist Forces did not maintain the strict flight and element structure used by the USAF. A Group of aircraft could consist of 1 leader and 49 followers or 25 leaders and 25 followers.

Defensive Split

If a Group of MiGs was surprised by an attack from the rear it would probably perform a split maneuver. Half the group would turn tightly to the left and half to the right. If the attackers concentrated on one of these split groups then the other half would come round and get onto the tail of the attackers.

There were many variants to the basic maneuver:

- Each of the split groups could go either high, stay at the same level or dive in the turn.
- When they realized that nobody was following, some split groups would leave the area and let their colleagues look after themselves.

- An aggressive group would break with one half going low and the other high. Sabres would invariably attack the low group because the MiGs performance advantage was not as apparent at low altitude. The high group would have increased its turn-rate by trading speed for altitude and could dive towards the tail of the Sabres.

End Run

Many decoy tactics were adopted with the aim of getting through the Sabre Combat Air Patrol. In the End Run, a Group of MiGs would race in front of a Sabre CAP. The Sabres would engage and so leave their patrol area. This left a gap for a larger MiG force to slip through unnoticed. The MiGs could then engage medium bombers and fighter-bombers that were easier targets.

Throughout the Korean war, MiGs were based around the Yalu; this river formed the border between Korea and China. Decoy tactics aimed at getting through the Sabre CAP were, therefore, well developed. It should be noted though, that in MiG Alley, if things are going badly for the USAF, it is possible for MiGs to be stationed at some of the bigger airfields near to and below the 38th Parallel.

Zoom & Sun

This was essentially a hit and run maneuver that was well suited to the MiG's performance advantage over the Sabre.

MiGs would orbit at 48,000 - 50,000ft, hiding in the sun, safe from detection and attack. When Sabres were sighted, the MiGs dived on them for one firing pass. The MiGs would then pull up sharply and regain the altitude and position with respect to the sun.

The tactic was possible due to the MiG's exceptional rate of climb and higher ceiling.

Roundabout or Yo-Yo

When protecting an area, MiGs would patrol in a huge circle or roundabout at an altitude that made them inaccessible to attack from Sabres. When Sabres were spotted the roundabout would move slowly in the direction of the enemy.

At some point the MiG Leader would start the attack and one by one the MiGs would descend and perform a slashing attack on the Sabres. The MiGs would attempt to avoid close-quarters combat. Their aim was to trade their dive-speed for altitude and get back up to a safe altitude as soon as possible. A new roundabout could then be formed and the attack would be repeated.

Waiting Game

The Communist Command soon became aware that the Sabre Combat Air Patrol could only stay in the MiG Alley area for about 20 minutes before low fuel forced them home.

To take full advantage of this situation, MiG squadrons would time their arrival in MiG Alley to coincide with the Sabres' withdrawal.

USAF commanders countered this tactic by sending Sabres in Waves so that as one patrol left the area another had just arrived.

The Communist response to this was to try to bypass the Air Patrol and fly south and then turn northwards and try to intercept fuel starved Sabre patrols that were returning home.

Pre-emptive Move

Sometimes MiGs were content to make feigned attacks on USAF fighter-bombers before they had reached the target area. Provided that this attack was sufficiently aggressive, the fighter-bombers would have to ditch their external tanks and stores so that they could maneuver for defense. At this point the MiGs would leave the area because the USAF fighter-bombers could not complete their task.

Upper Cut

Some MiG squadrons had their MiGs painted in a camouflage scheme in which the top of the aircraft blended in with the ground. This was useful for when the MiG was at a lower altitude compared with the Sabre.

This paint scheme was used by aggressive squadrons to trap unwary Sabre pilots. A large flight of MiGs could fly well below and to the rear of two decoy MiGs. Any Sabres that took the bait and attacked the higher MiGs would soon find a large number of enemy aircraft at their 6 o'clock position.

Pincer and Envelopment

This tactic was a further development of the waiting game. The idea was to catch USAF aircraft on the way home when the aircraft were low on fuel and the pilots were tired.

Large formations of MiG would fly SW and E from their bases in China. After evading the Sabre BARCAP, one formation would fly down the east coast and the other would fly down the west coast. After about a hundred miles the two formations would turn northwards and fly up the peninsula. The MiGs would pick off USAF aircraft returning home.

Combat Rules

During the Korean conflict, the USAF developed a set of combat rules and tactics that helped them improve their success rate during air combat. Here is a summary of some of the rules developed.

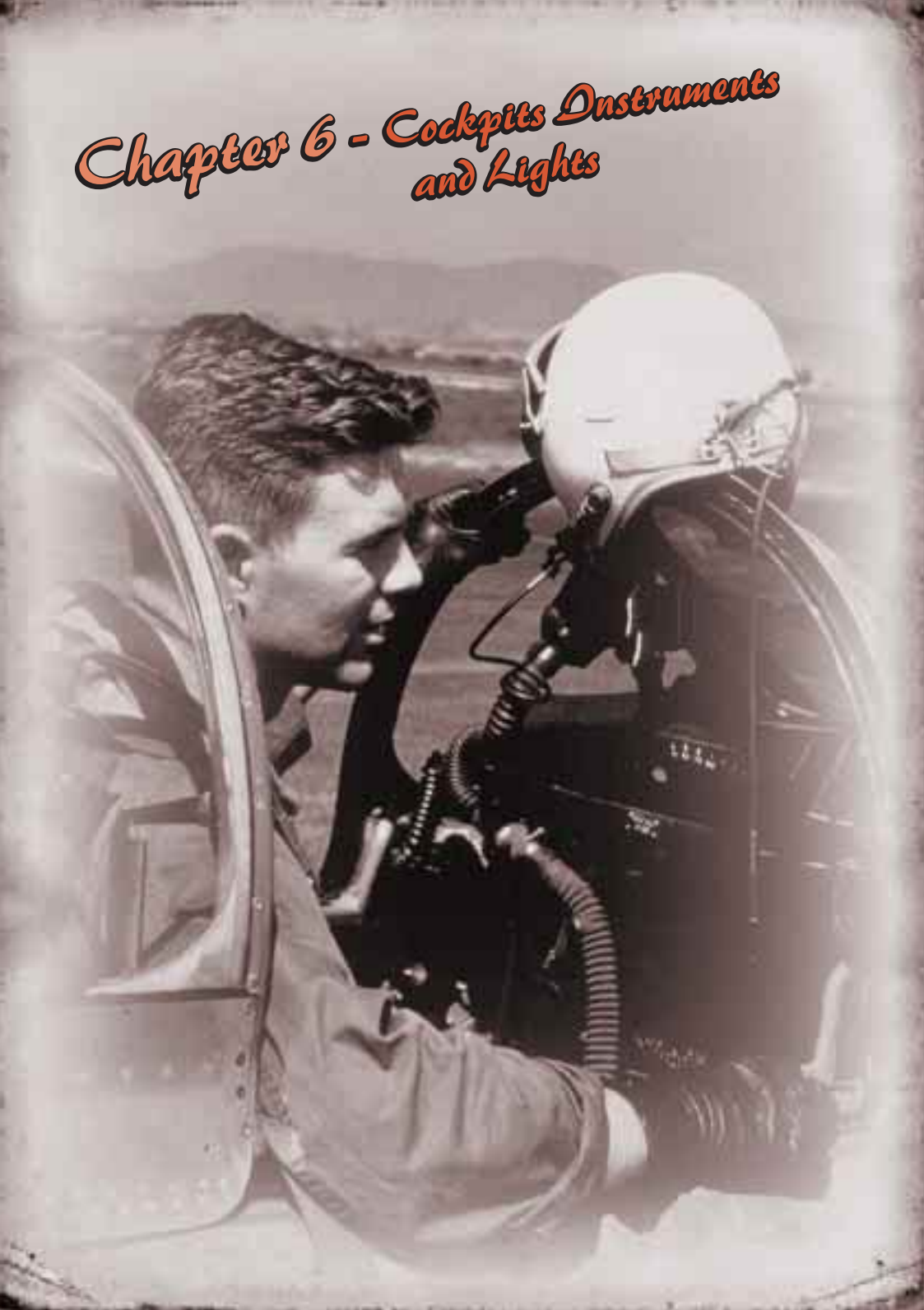
- Make sure that you are at high Mach when you sight the enemy.
- Remember to ditch your fuel tanks well before engaging the enemy and at the first indication that they are in the area. If one of your external tanks fails to disengage, forget trying to fight with it and head home immediately with your buddy.

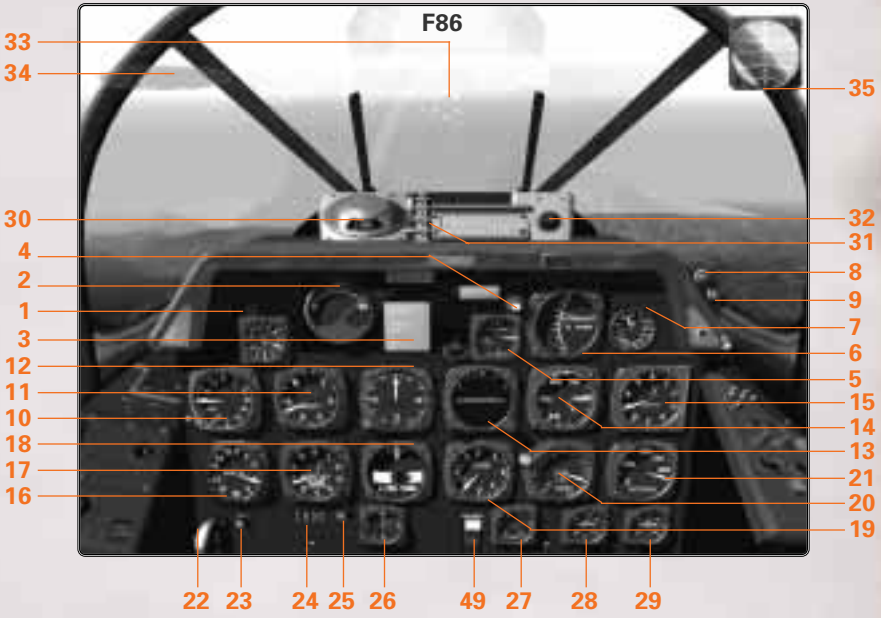
- Watch for attacks coming out of the sun.
- When you are engaging an aircraft never look away from it. One glance away can be enough to lose the sighting completely. Conversely, prior to engaging an aircraft don't stare at just one contrail or aircraft. Get the whole picture before committing yourself.
- If you see the enemy closing in, turn into the attack just before they come into range (typically somewhere between 2,500 and 3,500 feet, depending on the ammo used). Consider gaining altitude in the turn. Depending on your situation this could result in a higher turn rate and lower radius of turn.
- Stay at 100% throttle and avoid using your airbrakes. You must be very certain of your advantage before succumbing to the temptation of bleeding speed to stay behind an enemy aircraft.
- Don't shoot unless you have a positive identification. If you are not sure then you are out of range. In MiG Alley:

  a swept wing jet could be either a MiG15 or a Sabre. Some Sabres had yellow stripes on their fuselage. Some MiGs are painted with a camouflage scheme.

  a straight winged aircraft could be any of the following: F84E, F80C, F51D or Yak 9.
- Keep reminding your wingman to look around.
- Check your fuel during an engagement. You can send out a radio call (R , I , ?) to get a fuel check from the rest of the Group. Attempt to disengage when the aircraft with the lowest fuel is just above Bingo.
- If your wingman tells you to break off an attack do it immediately, no matter how close you are to "finishing" an enemy airplane.
- Don't panic. It never helps!

Chapter 6 - Cockpits Instruments and Lights





US Aircraft

1 **Accelerometer**

This measures the g force experienced by the pilot and the aircraft. If G Effects are enabled in the Preferences section the player can expect the following:

- At high g black outs will start to be experienced. The higher the g, the quicker the effect comes into play.
- At + 13g the wings will be ripped off the aircraft.
- At high negative g the display will red out.

2 **Voltmeter**

3 **Gun Camera Light**

4 **External Fuel Light**

The light is on when there is external fuel.

5 **Horizontal Stabilizer Position**

6 **Exhaust Gas Temperature**

Take note of the usual setting for your aircraft so that you will notice an abnormal reading.

The dial is calibrated in 100 degrees units. In standard operating conditions the reading should be about 650 degrees.

If Realistic Spool Up is enabled in the Preferences section and if you advance the throttle too quickly, all the fuel is not burnt in the combustion chamber and so some is burnt in the exhaust nozzle. You will see a rise in the exhaust gas temperature and some damage to the engine is caused. Spool Up is slower in these conditions.

7 **Outside Gas Temperature**

8 **Forward Fire Light**

This indicates significant engine damage.

9 **Aft Fire Light**

This indicates significant engine damage.

10 **Compass**

11 **Indicated Air Speed**

This is in graduations of 100 knots.

12 **Gyro Compass**

13 **Artificial Horizon**

14 **Thrust**

This gauge shows the percentage of the total available thrust at the current conditions. The small needle shows the thrust from 0-50%. Take 50 from the dial reading to get the actual reading. The large needle shows the thrust from 50-100%.

15,17 **Altitude**

The dial gives the altitude above the home airfield.

Small needle: 10,000 ft

Large needle: 1000ft

16 **Mach Dial**

18 **Slip and Turn**

19 **Vertical Speed Indicator**

The range is +/- 6000ft/min.

20 **Total Fuel**

This dial show shows the internal and external fuel level in pounds.

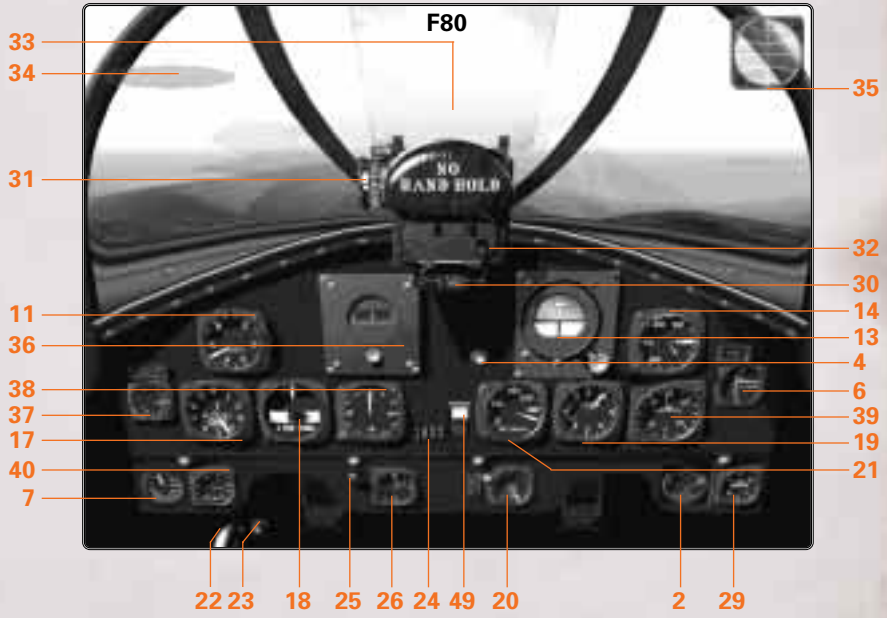
21 **Internal Fuel**

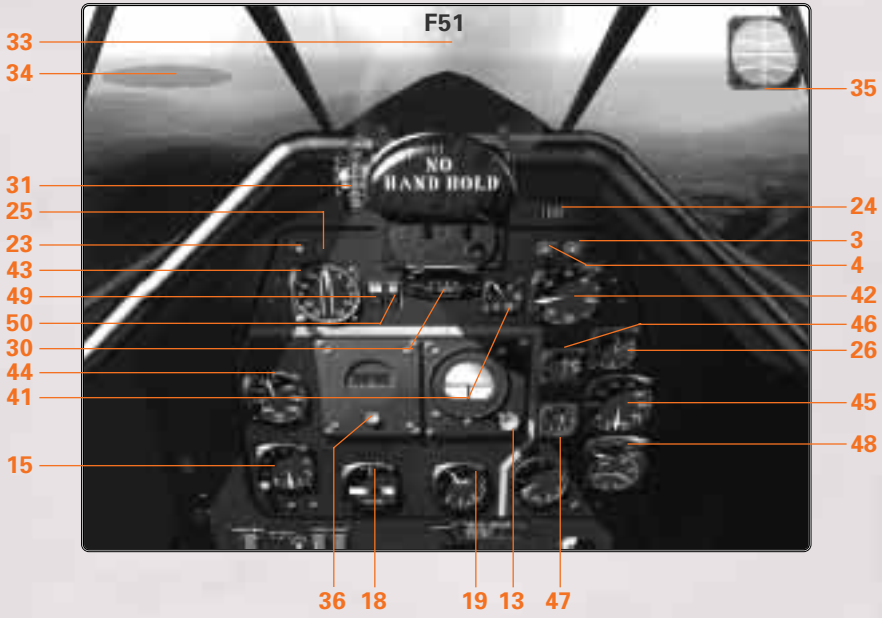
22 **Gear Handle**

When the handle is in the down position, the gear is lowered.

23 **Gear Light**

When the light is on, the gear is lowered.





24 **Rounds Count**

This shows the number of rounds of ammunition remaining. There are 6 guns on each aircraft. The total number of rounds for the F51 is 1880, the rest have 1800. Each gun fires at 1100rpm. Continuous firing then is only possible for 16-17 seconds.

25 **Flaps Light**

The light is on when the flaps are down.

26 **Clock**

27 **Hydraulic pressure**

A reduction in pressure indicates engine damage.

28 **Fuel pressure**

A reduction in pressure indicates engine damage.

29 **Oil Pressure**

A reduction in pressure indicates engine damage.

30 Gun Sight Range

This shows the range of the gun sight. The units are in 10 yards, so 20 indicates a range of 200 yards.

If either the Perfect or Realistic option is enabled in the Preferences section, this dial shows the range to the nearest aircraft in front of the player's aircraft.

If Manual ranging is enabled, then the player has to use the T and Y keys to manually adjust the range.

31 Gun Sight Wingspan

This shows the current wingspan setting for the gun sight. The units are in feet.

Wingspans:

MiG 15	33′ 1″
F86	37′ 1½″
F84	33′ 7¼″
F80	38′ 10½″
F51	37′ 0″

This is manually adjusted using the Q and W keys.

32 Gun Sight Range Light

This light is on when a target is within the gun range.

33 Gun Sight Target

34 Threat Indicator

This virtual instrument shows the position of other aircraft relative to the player. The smoked glass disc shows the plane of the player's aircraft wings. The vertical lines show the relative pitch position of the other aircraft. The line drawn in the plane of the smoked glass disc shows the relative yaw position. Red lines indicate Communist aircraft and blue lines represent UN aircraft.

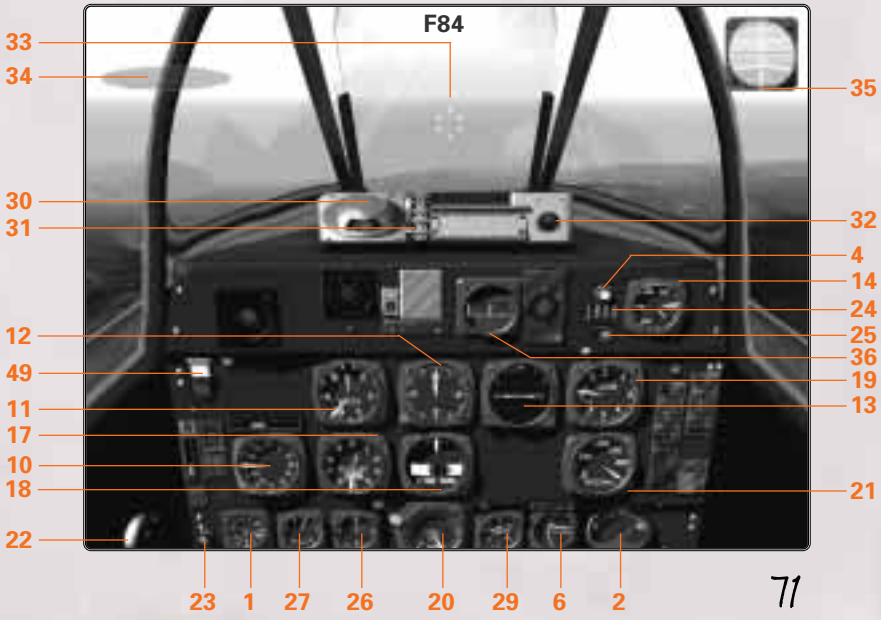
VIRTUAL INSTRUMENTS

Virtual threat indicator and artificial horizon instruments are available to help the player to retain situational awareness during combat. These instruments are designed to compensate for the fact that a simulation pilot does not get the same feedback during combat as a real pilot. A real pilot has full peripheral vision and feels the effect of gravity.

The virtual instruments can be toggled on/off using either the [H] key or the appropriate setting on the Preferences section.

35 Artificial Horizon

In this implementation of the artificial horizon, the pitch scale has been compressed so that the horizontal and vertical positions are in view at the same time. The horizontal position is represented by the traditional interface between blue and brown. The vertical positions are represented by white circles. Concentric circles at 30 and 60 degrees are also marked. The small graduations are in steps of 10 degrees.



36 **Horizontal Gyro Compass**

37 **Standby Compass**

38 **Radio Compass**

39 **Fuel Pressure**

40 **Hydraulic Pressure**

41 **Suction Gauge**

42 **Manifold Pressure Gauge**

43 **Remote Reading Compass**

44 **Air Speed indicator**

45 **Tachometer**

46 **Coolant Temperature Gauge**

47 **Carburetor air temp Gauge**

48 **Fuel/Oil Pressure/Temperature**

Oil temp at the top

Oil pressure on the left

Fuel pressure on the right

49 **Weapons toggle**

When the switch is down then guns are selected. Heavy ordnance (bombs, rockets or naplam) are selected when the switch is up. Use either [,] or [N] to toggle the weopons.

50 **Second Weapons toggle**

On all aircraft, except the F51, only one type of heavy ordnance can be held at any one time. Hence, the second weapons toggle is only needed for the F51. When the first weapons toggle is up then the second weapons toggle comes into effect. If the second switch is down then rockets have been selected. Otherwise it will be bombs or napalm.

MiG 15

1	Oxygen Pressure
2	Airspeed
3	Altimeter Indicator
4	Radar Altimeter Indicator
5	Artificial Horizon
6	Turn Indicator
7	Clock
8	Rate of Climb
9	Fuel Gauge
10	Radio Compass Indicator
11	Long Distance Gyromagnetic Compass
12	Fuel, Oil, Temp Indicator
13	Engine Speed
14	Temp Gauge
15	Compass
16	Voltmeter
17	Cabin Pressure
18	Gear Light

19 **Flaps Light**

20 **Rounds Count**

This shows the number of rounds of 23 mm cannons remaining. There are 2x23mm cannons on the MiG, the total number of rounds is 160. Each cannon fires at 560rpm. Continuous firing then is only possible for 8-9 seconds.

In addition there is a 37 mm cannon which also fires when the trigger is pressed. This fires its 40 shells at 400rpm.

21 **External Fuel Tanks**

22 **Gun Sight Range**

This shows the range of the gun sight. The units are in 10 yards, so 20 indicates a range of 200 yards.

If either the Perfect or Realistic option is enabled in the Preferences section, this dial shows the range to the nearest aircraft in front of the player's aircraft.

If Manual ranging is enabled, then the player has to use the T and Y keys to manually adjust the range.

23 **Gun Sight Wingspan**

This shows the current wingspan setting for the gun sight. The units are in feet.

Wingspans:

MiG 15	33′ 1″
F86	37′ 1 1/2″
F84	33′ 7 1/4″
F80	38′ 10 1/2″
F51	37′ 0″

This is manually adjusted using the Q and W keys.

24 **Gun Sight Range Light**

This light is on when a target is within the gun range.

25 **Gun Sight Target**

VIRTUAL INSTRUMENTS

Virtual threat indicator and artificial horizon instruments are available to help the player to retain situational awareness during combat. These instruments are designed to compensate for the fact that a simulator pilot does not get the same feedback during combat as a real pilot. A real pilot has full peripheral vision and feels the effect of gravity.

The virtual instruments can be toggled on/off using either the [H] key or the appropriate setting on the Preferences section.

26 Threat Indicator

This virtual instrument shows the position of other aircraft relative to the player. The smoked glass disc shows the plane of the player's aircraft wings. The vertical lines show the relative pitch position of the other aircraft. The line drawn in the plane of the smoked glass disc shows the relative yaw position. Red lines indicate Communist aircraft and blue lines represent UN aircraft.

27 Artificial Horizon

In this implementation of the artificial horizon, the pitch scale has been compressed so that the horizontal and vertical positions are in view at the same time. The horizontal position is represented by the traditional interface between blue and brown. The vertical positions are represented by white circles. Concentric circles at 30 and 60 degrees are also marked. The small graduations are in steps of 10 degrees.

28 Gun camera light

29 Fire Lights

30 Weapons Toggle

Gun Camera

Introduction

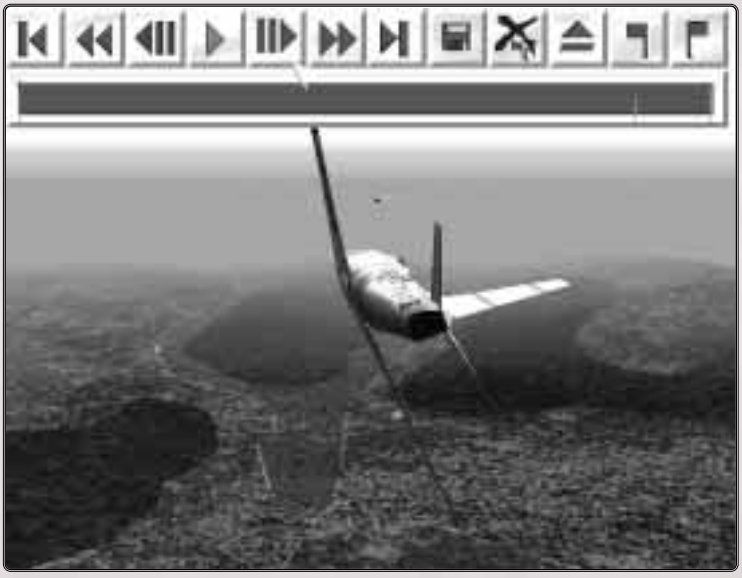
The Gun Camera or Replay feature in MiG Alley allows you to record your flights. You can then replay the flight or save all or part of the recording to disk.

Recording

In the Views sub-section of the Preferences section the following gun camera controls are offered:

Off/Trigger/On

The gun camera can either be off all the time or on when the trigger is pressed or on all the time. When Trigger is selected, the camera is not switched off immediately the trigger is released. The amount of time that the camera is left on after releasing the trigger depends on the ordnance selected. So for example, the camera is left on longer after a bomb release than when firing cannon/bullets. The V and X keys can over-ride this option.



Replay

On the Replay screen, a set of icons and a running bar are displayed over the 3D.

When a recording is being replayed, a line moves along the running bar to indicate the current position. There are two other lines on the running bar:

Start Marker

End Marker

The default position for these markers is at the start and end of the running bar.

Starting from the left the icon set functionality is:

Rewind to the previous marker 

Rewind to the previous block 

The recording is saved in discrete blocks that are not a preset length. Rewinding through the blocks is a quick way of moving around the recording.

Rewind one frame (only available when paused) 

Play/pause 

Forward one frame (only available when paused) 

Forward to the next block 

Forward to next marker 

Save the marked block 

Reset the markers to the default position 

Exit replay 

Set the start marker to the current position 
Setting the marker to after the end marker moves the end marker to the end.

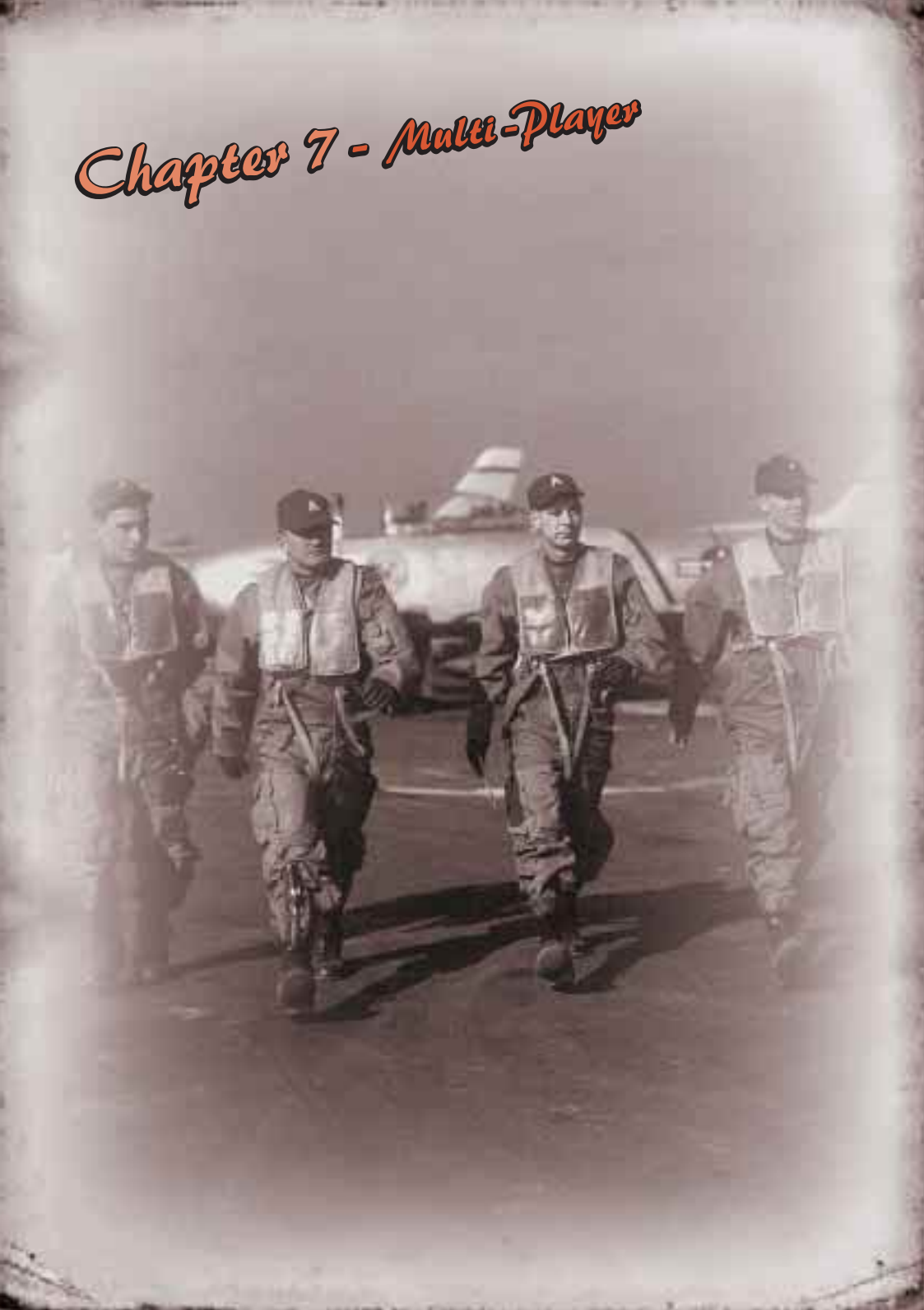
Set the end marker to the current position 
Setting the marker to before the start marker moves the start marker to the beginning.

Selecting a set marker when on its current position will remove the marker.

The icons can be selected by either the keyboard (key 1 for the first icon, 2 for the second icon etc.) or the mouse pointer.

In addition to the controls provided by the icons, most of the usual view keys are available using the function keys. Any view associated with a cockpit is not available because the recording system does not record the instrumentation.

Chapter 7 - Multi-Player



Multi-Player

Overview

You have a series of options available to you in Multi-Player. They are:

8 Death Match Scenarios

8 Team Play Scenarios

Quick Missions

Aircraft:

F86 Sabre, A, E, F variants

F80 Shooting Star

F84 Thunderjet

F51 Mustang

MiG 15 and MiG 15bis

Click on Multi-Player on the Main Menu to begin a Multi-Player game.

Selecting a service provider

To create a game you must first choose the medium across which the game will be played. A list of these will be displayed. The most common services supported are:

IPX Connection (network) – Max 8 players

Internet TCP/IP Connection – Max 8 players

Modem Connection – Max 2 players

Serial Connection – Max 2 players

In order for the game to successfully use the selected service it must be installed, i.e. for a network you must be connected to a Local Area Network, for Internet you must be connected to the Internet, for modem you must have a modem installed and for serial connection you must have a serial cable (null modem) connecting the two machines.

For Internet and modem games a modem speed of at least 28.8K is required. For serial connection a speed of 56K or better is recommended.

To select the service you want click on its name. You can now decide to host a new game by clicking on the Create button, or join a game by clicking on Join. Double clicking on a service name will create a new game with that service.

Creating a game

Once you have decided to create a game the Game Selection screen will appear. This allows you to configure the type of game that you want and to set session parameters. The various parameters are:

Player name

This allows you to enter the name that you wish to be known as in the game.

Session name

This is the name that will appear to other players trying to join your game.

Password

This allows the host to set the password for the game. For new players who do not know the password, there's a Visitors' Book which is described later.

Data Rate

This affects the amount of data that is transmitted and received. It will initially be set to a level that is suitable for the service provider that has been chosen. If difficulties arise in creating and playing games then try a lower data rate. High data rates can be used if you have good connections to other players.

Data rate does not affect 3D frame-rate. However, higher data rates lead to a more accurate simulation.

Multi-Player

Game Type

This determines the range of missions that can be played. Death Match and Team Play games involve only human controlled aircraft. A range of different starting positions are available. Quick Missions allow you to play with other players and AI aircraft in the short scenarios available in the game.

Select Side

In Team Play or Quick Missions you can select whether to play UN or Red aircraft. You will be limited to that side's aircraft for the game. In Death Match all aircraft are available to be chosen.

Scenario

For Death Match and Team Play choose the starting position of the aircraft. The Quick Missions do not have a scenario, you will be able to choose from the Mission Select screen and alter missions later.

Once you have selected the parameters you wish, click on Continue. At this stage if you have selected to play Quick Missions you will be able to select which mission from the Mission Select screen. Click on Flight Line to continue.

At this stage you may have to provide some more connection information:

IPX Connection and Internet Connection

No more information needs to be provided, the Flight Line screen will appear.

Modem Connection

A Windows dialogue box will appear allowing you to configure your modem if required and to wait for the other player to contact you. Once you are satisfied with your modem configuration, click on Answer to wait for the other player to contact you. Once he has done so you will be taken to the Flight Line screen.

Serial Connection

A Windows dialogue box will appear allowing you to configure your serial connection. Select the Port into which your serial cable is connected. It is best to use the highest baud rate with which a game can be created. The rest of the settings can be left at default. Once you are satisfied clicking on OK will take you to the Flight Line screen.

Joining a game

IPX Connection

A list of network games available will appear. Select the one you wish to join by clicking on it and then clicking Select, or just double clicking on the name. You will then be taken to the Game Selection screen.

Internet Connection

A Windows dialogue box will appear asking you for the name, or IP address of the computer that is hosting the game. Enter the address and click on OK. If you are on a Local Area Network, leaving the address blank will search the network for games available. Once your computer has connected to the host a list of games will appear. Select the one you wish by clicking on the name and then clicking Select, or by double clicking on the name. You will then be taken to the Game Selection screen.

Modem Connection

A Windows dialogue box will appear allowing you to configure your modem and provide the telephone number of the computer you wish to connect to. Once you are satisfied with your modem configuration and have entered the phone number click on Connect. MiG Alley will then attempt to connect you to the host computer and if successful you will be taken to the Game Selection screen.

Serial Connection

A Windows dialogue box will appear allowing you to configure your serial connection. Select the Port into which your serial cable is connected. The rest of the settings must correspond with the host's settings. Once you are satisfied click on OK. MiG Alley will then attempt to connect you to the host computer and if successful you will be taken to the Game Selection screen.

Game Selection Screen

Once you have connected to the host computer you will be taken to the Game Selection screen. This allows you to view the game setup that the host has selected. You can also enter your name and, if the game is Team Play or Quick Mission, select the side you wish to play on. If the game has a password that you do not know, you can request entry by clicking on the button to add your name to the host's Visitors' Book. If the host decides you can join then you will be able to join after a short period of time. When you are ready to join the game click on Continue, and you will be taken to the Flight Line screen.

Flight Line Screen

The Flight Line screen displays players currently in the game, along with aircraft chosen and their score. It also allows you to chat to other players and select further game options.

The players in the game are listed. In Team Play and Quick Missions, UN players are listed first, followed by Red players. The players' names are followed by the aircraft they have chosen, the game screen they are currently in and their score.

To chat to other players type your message in the box and press Return. In Team Play or Quick Mission games you can choose to chat to either your side only or all players by clicking on the appropriate tick box at the top of the screen. To chat to an individual player, click on his name. The name will highlight and your messages will be sent only to him until you click on another name or choose everybody or your side only.

Quit

Quit the game.

Fly

In Death Match and Team Play games when everybody is ready the host can click on Fly and the game will begin. If a player joins the game whilst the other players are in the 3D then he will be able to click on Fly to join in.

Frag

In Quick Mission Games clicking on Frag will take the player to the Frag screen. Here he will be able to choose in which aircraft position to fly. This will determine the type of aircraft the player will fly. Chat facilities are available as in the Flight Line screen, but messages will be sent to all players. To choose an aircraft to fly click on the pilot name. You cannot choose an aircraft that has already been chosen by another player. To unassign yourself from an aircraft click on another one or click on unassign. When all players have chosen aircraft the host can click on Fly and the game will begin. A player may join the game later, whilst other players are in the 3D, and he will then be able to choose an aircraft and select Fly to join in.

Color text

Your name will be in white, whereas other players will be in green. AI pilots' names are in yellow. A player who has died will be marked K.I.A., killed in action, in grey.

Visitors' Book

A new player wanting to join the game, but who doesn't know the password, should click on "Add my name". A message will appear in the host's chat window indicating this request. The host should first click on Visitors' Book and then on Excluded Status. The status will change to Accepted. The new player is then able to join.

Radio

Players can edit radio messages that they wish to send to other players during the game. To do this click on Radio. The Radio screen allows you to edit the messages, or to reset to a default set if you wish. To edit a message click on it and type in the new message. Radio messages will be saved out when you leave the game and kept for future games.

Paintshop

In Death Match and Team Play games you may choose the type of aircraft appropriate to your side (any if Death Match). You can also choose the decal (nose art) to be displayed on your aircraft in these games as well as in Quick Mission games. To do this simply click on the desired decal (MiGs have no choice) and select the aircraft type from those provided.

Brief

In Quick Mission games the host can alter the mission setup by selecting Brief. Once you are satisfied with the mission click on Flight Line to return. If the host edits the mission brief then when he returns to the Flight Line any players in the Frag screen will be returned to the Flight Line and must reselect an aircraft to fly.

Prefs

Players have access to the Preferences options. However, those options that affect game difficulty are controlled by the host and only he may alter them.

On game options

Once a game has commenced there are several options that are available in Multi-Player games that are not available in single player games.

- From the cockpit map screen (displayed on pressing M when in a cockpit) there is an option to send a radio message to other players in the game. These messages can also be sent from the Radio Communications menu (press R when in the cockpit). Comms Msg Recipient and Comms Message are two additional options. Comms Msg Recipient allows you to select whether to send messages to all players or only to members of your team. The default selection is to all. The selection will stay the same until it is changed or a new game begins. Comms Message will display a list of your radio messages. Selecting the numbered message from the list will send that message to everybody or your team depending upon the Comms Msg Recipient.
- When a player dies in Death Match or Team Play games he will be resurrected and his aircraft will start to spiral upwards in autopilot mode. To retake control of the aircraft press J. However control will be automatically handed over at 30,000ft or 2,000ft above the highest aircraft.
- If a player is killed then he can wait until his aircraft resurrects on its own or he can press S to force a resurrection to take place. This is not available immediately, the player must wait for a few seconds before being able to resurrect. The S key is only available in Death Match and Team Play games.
- In Quick Mission Games a player who has died can exit the game and go to the Frag screen to choose an AI aircraft to take over. If there are no more available aircraft then the player must wait at the Flight Line screen for the game to end.

Ending the game

If the host selects to end the game then all players will be taken to either the Debrief screen for Quick Missions or to the Flight Line screen.

If a player dies in a Quick Mission Game then he will be taken to the Flight Line screen. Here he can go to the Frag screen and select an available aircraft and rejoin the game in that aircraft, taking over the seat from the AI pilot.

Players who exit the game can rejoin for as long as the host keeps the game running.

Debrief

In Death Match and Team Play games there is no Debrief. The scores of each player will be displayed in the Flight Line screen.

For Quick Missions the Debrief will show all items destroyed. Players can go to the Flight Line screen for another game.

Chapter 8 - Campaign Histories

Campaign Histories

It was Japan's defeat in World War II that first brought the Korean peninsula onto the pages of the world's newspapers. Formerly a Japanese annex, Korea was occupied by both Russian and United States forces, their respective areas meeting on the 38th Parallel of latitude. The plan was that Korea should once again become an independent state.

For several years the US and Russia failed to reach agreement regarding the withdrawal of troops. In 1947 talks broke down completely, with America offering the opportunity for resolution to the United Nations. Korea became a pawn in an escalating power struggle between the two forces, with the North-South demarcation becoming a heavily fortified front.

The UN opted to allow free elections within Korea, but the Russians refused admittance to the North. The result was the creation of the Republic of Korea in the South in August 1948, and a Russian puppet government, the Democratic People's Republic in the North in September. Simultaneously the Russians trained soldiers and officers, creating an army in the North. American intelligence was almost non-existent in this area, and the increasing strength of the occupying army was hardly noticed.

Meanwhile, the US increasingly believed that the Communist forces would not invade the South, believing that any future military action would occur world-wide. The Russians, conversely, eyed the South enviously, knowing that it would aid their presence in the Pacific.

But they made their own mistakes. The Russians believed that if they did cross the 38th Parallel there would be no resistance from outside.

MiG Alley covers the period from 25 June 1950 to 1 April 1951.

North Korea Invades

25 June 1950 - 1 August 1950

The North Korean Army launched its invasion on the South at dawn on Sunday, 25 June 1950. A fierce artillery bombardment preceded an assault by infantry and squadrons of T-34 tanks. The Sunday attack was deliberately chosen to catch American defenses at their least effective, a tactic that had worked so effectively when the Japanese bombed Pearl Harbor.

The attack was straightforward as the tanks rolled towards the first targets, the towns of Chunchon and Kaesong, the latter of which was captured at 9 am. At the same time further troops landed at Kangnung and proceeded west to meet the mainland force.

The response was difficult, since the official response to an invasion was to evacuate American personnel, but even this was only possible at the request of the US Ambassador in Seoul. Retaliatory strikes on ground targets were only permissible by order of General MacArthur, the Supreme Commander Allied Powers in the Pacific Theater. Expecting a request for evacuation, the Commander, Major-General Partridge, used existing plans to prepare for a major evacuation starting 3.30am, 26 June.

During the first day some reports suggested that the Republic of Korea (ROK) Army had recovered from the shock of the invasion, had rallied itself and was fighting back. Nevertheless North Korean Yak-9 fighters were spotted over Kimpo and Seoul airfields, which only underlined that the ROK Air Force had nothing with which to oppose them.

These first Yaks were probably reconnaissance flights, as by 3pm, and then again at 7pm, strafing runs were made on both airfields, destroying several aircraft, including a C-54 transporter and a fuel dump.

Meanwhile, the US requested and obtained an emergency meeting of the United Nations Security Council. It was agreed to demand the cessation of hostilities and a withdrawal of North Korean forces, and that all member nations would assist in the execution of this resolution. Strangely the Russians chose to miss this meeting, and were unable to use their power of veto.

Shortly before midnight on the first day, with North Korean tanks just 17 miles north of Seoul, the Ambassador ordered the evacuation of women and children. General MacArthur requested that General Partridge provide fighter cover over Inchon during the withdrawal. But with only limited aircraft available (an idea to request help from a nearby Australian squadron was rejected), the pilots were ordered to avoid the mainland and engage the enemy only if the transport ships were directly threatened.

On 27 June, President Harry Truman ordered sea and air forces in the Far East to give support to the ROK forces, effectively authorizing an armed conflict. As aircraft flew in they were given orders to patrol the area between Seoul and the coast, protecting the evacuation.

These fighters encountered no enemy opposition until midday when five Yak-7s dived to attack Kimpo. In just five minutes three were shot down. An hour later eight Il-10 fighter bombers tried to attack again, but four were shot down with no UN losses. No further attempts to attack the evacuating personnel were made that day.

Later on 27 June, General Partridge was given orders to attack any ground targets of opportunity, including supplies, bridges and troop concentrations. The first attempt was a failure, however, when bad weather meant that no targets could be found.

A further attack the next morning fared little better. Although targets were successfully bombed, all four B-26 bombers were damaged in the attack. One crashed on landing, killing its crew.

As the weeks went on, North Korean troops continued to push south through the peninsula, although so effective were air strikes that most movement had to take place under the cover of darkness. Nevertheless, the advance continued, with the prize being the Pusan Perimeter in the South East.

The Pusan Perimeter

2 August 1950 - 15 September 1950

With the North Korean forces stretched throughout the peninsula, and the thought that victory was slipping through their fingers, a series of bloody and desperate attacks were launched against the Pusan Perimeter. The port town of Pusan was used to resupply the UN troops on a very regular basis.

Reconnaissance flights demonstrated that the North Korean forces were pushing towards Pusan from the West at a speed of about two miles per hour 24 hours a day, easily defeating any weak resistance.

Only the rapid deployment of massive reinforcements could prevent the loss of the Pusan Perimeter, and at last these forces were beginning to materialize. The first ground troops from mainland America landed on the last day of July, while air support flew in via Japan.

On 7 August, a major UN counter-offensive was rendered ineffective by fierce resistance, despite the massive amount of Allied air power. By 12 August the Allies began to retreat towards Masan, with soldiers collapsing in temperatures of 100 degrees. Two days later they were back at their start point.

Despite no ground being taken, the counter-offensive did manage to stall the North Korean advance, and for the rest of August the spearhead made no further major advances.

In the meantime, however, it was apparent that there was a risk in the area around the Naktong. If the enemy could break through here it could split Pusan and Taegu, cutting the perimeter in two, probably resulting in the collapse of the Allied defense.

Sure enough, on 6 August the NKA began crossing the Naktong near Yongsan, where the line was thinly defended. The troops then successfully occupied high ground on the east of the river.

Allied forces heavily bombarded the area, and on 17 August they managed to retake the high ground, forcing a retreat by the NKA, who also suffered heavy losses.

While attacks took place all over the perimeter, the greatest threat came when elements of the NKA were detected moving through a mountain corridor that ran all the way to Pusan. Pohang-based

Mustang's struck hard at the column, but forces succeeded in entering the port of Pohang and started to approach the airfield. The Americans had no choice but to destroy any equipment that couldn't be moved and fly out to Japan. Ground forces held against the coast now had no air support and had to be evacuated by sea. Yet on 20 August the Allies counter-attacked and succeeded in recapturing Pohang, removing the immediate threat to the rest of the perimeter.

In the evening of 31 August, the North Koreans went for a final offensive against the perimeter, and were initially very successfully, capturing Haman and Yongsan. By 6 September, the NKA advanced to within eight miles of Taegu. Newly deployed British troops managed to stall the advance, while US Marines recaptured Yongsan.

Along with other floundered sorties, the North Korean gambit failed and the immediate threat to Pusan was over. The way was now open for a massive counter-offensive, as Allied troops attempted to force the Communist forces back over to the north of the 38th Parallel.

Breakout / To the Yalu

18 September 1950 - 1 November 1950

General MacArthur's plan to remove the North Koreans from the south of the peninsula once and for all was not a scheme cooked up in September. Indeed, the idea was first mooted at the start of July, when MacArthur appealed for reinforcements to the Joint Chiefs of Staff.

The plan was to strike behind the North Korean forces. Using amphibious vehicles, troops could land at Inchon, far behind the battlefront and spread east. In that way they could cut off supplies to the NKA which was still fighting around the Pusan Perimeter.

Reinforcements were provided, but were assigned to support the remaining armies within the perimeter. However, a single division would become available to cut off supply routes in mid-September.

The Operation, called Chromite, also involved the Marines. Their plan was to destroy batteries on Wolmi-do island, to land within Inchon itself, to capture Kimpo airfield and to retake the city of Seoul. The army still situated within the Pusan Perimeter would push up to meet them.

But the Joint Chiefs were skeptical that such a plan could work. There were only two days of the year - 15 September and 11 October - that the tide would be high enough to allow the heavy troop ships to reach Inchon harbor and even then there was only a three hour safety margin. Even with the troops deployed in smaller landing craft, they still had to scale 12 feet high walls with ladders before attempting to destroy the enemy.

MacArthur was well aware of the risks, but he was convinced that it would succeed. Likening it to a surprise attack by the British to claim Canada, he claimed that here in Asia was where the Communist conspirators elected to make their play for global conquest. "We shall land at Inchon and I shall crush them."

On 28 August, the Joint Chiefs formally approved Chromite, enabling the final details to be worked out. Although it was still an incredible risk, it was considered justified, as Chinese forces were beginning to amass on the border of North Korea and some American aircraft had been fired upon. MacArthur was determined to win the war before the Chinese intervened, which seemed increasingly likely.

At 06.33 on 15 September, Marines landed at Wolmi-do meeting limited resistance. Early in the afternoon the warships began pounding the buildings along Inchon harbor in readiness for the landing which was made at high tide 17.30. By midnight all four objectives had been taken, at the cost of 20 lives. The gamble had paid off.

For the following six weeks, UN forces continued to spread back into South Korea, finding mostly abandoned airfields on their way. On 27 September MacArthur was ordered to totally destroy the NKA and form a united Korea under President Rhee, on the condition that only ROK forces were used around the Chinese and Russian borders. Indeed, a surrender demand had already been issued to the NKA Commander-in-Chief, the response to which was that China would intervene if the UN invaded North Korean territory. The demand was formally rejected on 10 October, and the order to invade North Korea was given.

While attacks took place in North Korea, UN intelligence failed to notice massive Chinese armies crossing into the peninsula under the cover of darkness. It was generally agreed that not more than 60,000 troops could enter the peninsula, but it turned out to be three times that. It was to lead to a quite startling turn-around in the war.

Campaign Histories

Chinese Intervention

2 November 1950 - 1 January 1951

Although the extent of the Chinese involvement in Korea was still not fully apparent at the start of November, the possibility of massive strikes threatened a UN force that was already over-stretched and low on supplies. The Eighth Army by the Chinese border was ordered back behind the Chongchon river, where it could resupply and regroup in preparation for a new offensive.

On 3 November, the UN air force representatives met to decide on a formula for stepping up the air war. It was felt that it was necessary to bomb bridges being used to resupply the Chinese and other ground targets essential to the war effort. On 6 November attacks on the bridges were authorized, though every precaution was to be taken to ensure that no aircraft strayed into Manchuria. The Joint Chiefs also insisted that no attacks were to be made close to the Russian border, no matter how attractive potential targets might be.

Bombing began on 8 November, supported by F-80s jet fighters. Six MiGs dived to attack the F-80s, and after a brief burst of inaccurate fire, all but one climbed again and retreated. The sixth continued to dive and was shot down. This was the first jet-versus-jet confrontation in history.

As more MiGs were sighted, it soon became clear that the F-80C was no match. As a result, F-86A Sabres and F-84E Thunderjets were committed to the conflict.

By the last week of November, UN bombers had damaged or destroyed around 65% of North Korea's strategically important bridges. And yet the flow of supplies was barely interrupted. Chinese engineers erected pontoon bridges and in addition, the Yalu began to freeze with ice thick enough to support heavy equipment. Even nine attacks on supply depots seemed to do little to prevent the Chinese build-up.

Despite the grossly inaccurate reconnaissance and a number of unsuccessful sorties, it was still generally believed that a major drive would take the UN to the Manchurian border. This was primarily because small advancements were met with limited resistance.

This was to play into the enemy's hands. Tactics taken straight from Mao Tse-tung's guerilla handbook would have the UN over-stretching itself into Chinese territory, before they would be attacked with the full might of Communist aggression.

Dawn on 25 November saw wave after wave of Chinese troops attack a position north-west of the river. They were slaughtered by UN artillery. That afternoon, though, a second charge smashed through the Allied lines, forcing a withdrawal.

By 27 November the commanders finally began to realize the full extent of Chinese involvement. Only a massive retreat and reorganization, recreating a front on the 38th Parallel, prevented a sweeping counter-attack. But the Communists were once again considering invasion of the South.

The Spring Offensive

5 January 1951 - 1 April 1951

The Korean War had left Josef Stalin with a dilemma. He had sanctioned the original invasion of the South, but this was based on the assumption that victory would be swift and without retaliation from the United Nations, and in particular, the United States.

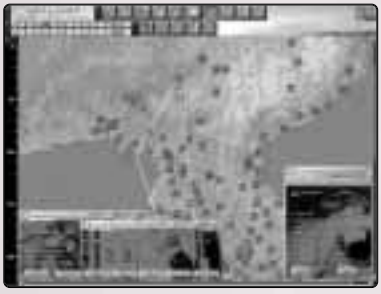
When the NKA failed to achieve its objective he had to decide whether to withdraw support of the Democratic People's Republic or to encourage Chinese involvement in the war, while maintaining a subtle support with Russian troops.

China already had a contingent of the most experienced Soviet pilots, primarily to train Chinese pilots in the MiG-15. Yet the initial sorties against the F-86 Sabre demonstrated that it would be some time before the Chinese pilots would be capable of holding their own against vastly more experienced airmen, if ever. So, more often than not, Soviet pilots flew the important missions against UN fighters.

Campaign Histories

The Chinese plan for taking back parts of North Korea primarily involved air-to-ground attacks. This was an unpopular choice because it was thought that the UN would retaliate within the borders of China. However, General Liu Ya-lou, Commander-in-Chief of the Chinese Air Force, planned to use only Korean airfields. Since the MiG had a range of just 100 miles, it was necessary to clear out the area around the Yalu, before rebuilding and lengthening a number of runways to extend air attacks further south.

The first phase of Liu's plan took place towards the end of January, when MiGs operated over Yalu in larger formations than ever before. Simultaneously, Chinese and North Korean engineers were repairing airfields at Sinuiju and Pyongyang. Sinuiju was protected by existing MiG support, while Pyongyang had its anti-aircraft support increased to around 100 guns.



Yet these improvements were short lived as UN forces pounded Pyongyang, cratering the runway, while Thunderjets strafed Sinuiju and shot down four supporting MiGs.

The subsequent weeks brought renewed pressure on other airfields, but as the UN took ground they were weeks away from repairing seriously damaged runways. Sabre support was still limited for some long range bombing runs, including bridge targets.

Progress for either side was still severely limited simply because of over-stretched supply lines. It seemed that a slow and carefully planned offensive, making full use of air superiority, was the only way to put an end to this war.

For two years the Front Line did not move and positions were fortified along the 38th Parallel. Finally on 27 June 1953 an armistice was signed.

In just three years, South Korea suffered 300,000 military casualties (killed, missing and wounded). American casualties totaled 142,000, British Commonwealth 7,000 and other Allies 10,000. Chinese and North Korean casualties were estimated to be perhaps 2 million, while civilian casualties throughout the peninsula were thought to total 1.25 million.

Chapter 9 - Preferences

Preferences

3D

Display Driver

This combo-box holds the 3D drivers that MiG Alley has detected. The displayed driver is the currently selected one.

Resolutions

This combo-box holds the range of resolutions available for the current driver.

Gamma Correction

Minimum, Low, Medium, High, Maximum

Each 3D card/monitor setup produces a different brightness/contrast output. This option allows you to set the monitor output for MiG Alley without altering your standard monitor settings.

Lowest Frame-Rate

This sets the lowest frame-rate at which you wish the game to run. The combo-box holds the range of frame-rates available.

Auto Frame-Rate

In general the more 3D detail you can see, the lower the frame-rate will be.

When Auto Frame-Rate is enabled, MiG Alley automatically turns 3D detail on or off to attempt to maintain a frame-rate that is higher than the lowest frame-rate setting.

If Auto Frame-rate is enabled, then the automatic frame-rate adjuster will over-ride other settings made in this and the 3D II Preference screen.

Ground Shading

On/Off

This controls Light shading on the ground.

Item Shading

On/Off

This controls Light shading on aircraft and other mobile items.

Reflections

On/Off

Canopy and instrument glass reflections. On some graphics cards, the reflections can fade in/out depending on the angle of the sun.

Weather Effects

On/Off

With this on, you may encounter rain, snow and mist.

3DII

Filtering

None/Bi-linear/Tri-linear/All

These settings increase detail at lower altitudes. The more details you have on though, the lower your frame-rate may become.

Transparency

On/Off

This enables transparency on special effects like contrails and smoke.

Texture Quality

Minimum, Low, Medium, High, Maximum

This has quite a considerable effect on the frame-rate of the game but also has a large effect on the quality of the 3D visuals. The effects are especially noticeable in the cockpit.

Trees Etc

On/Off

Trees and other inconsequential items can be turned off to achieve higher frame-rates.

Routes

On/Off

Small roads, rivers and rail lines can be turned on or off.

A/C Shadows

On/Off

This option toggles aircraft shadows visibility on the ground.

Item Shadows

On/Off

This option toggles item shadows visibility on the ground.

Horizon Fade

Near/Far

With Horizon Fade set to Near, the display is more realistic, but the frame-rate is reduced.

Horizon Distance

Near/Far

With Near Horizon enabled, the ground detail does not extend as far but the frame-rate is improved.

Contour Detail

Low/High

When Low Contour detail is enabled, the ground is coarser but the frame-rate is improved.

Flight

Flight Options

Minimum, Low, Medium, High, Maximum, Custom

This option controls all the flight preferences described below. The option allows a quick way of changing the flight settings. If you modify an individual flight option like Power Boost then the Flight Option will change to Custom.

Flame-Outs

On/Off

These can occur at very high yaw angles. To restart your engine, bring the throttle below 25% and press E .

Auto Throttle

On/Off

When enabled, the throttle is automatically adjusted to allow the player to maintain his position behind his opponent. This option only kicks-in when the player is behind an opponent and in a good combat position.

Power Boost

On/Off

When enabled the thrust is about twice what was available in reality.

Wind Effects

On/Off

This option controls the general wind effects.

Wind Gusts

On/Off

When enabled, gusts are noticeable at all stages but particularly during landing.

Flight Model

Easy/Realistic

When the realistic option is selected spins are realistic and idiosyncratic behavior is accurately modeled.

Airframe Stress

On/Off

When enabled, if you pull too many g's you will break off a wing.

External Stores Drag / Weight

On/Off

When enabled the weight and drag of your external stores affects the performance of your aircraft.

Torque / Slipstreaming

On/Off

This option only applies to piston engined aircraft. When the torque and slipstream effects are turned on, the torque of the engine is

transmitted into the fuselage and the airflow over the wings and tail surfaces is affected by the rotation of the propeller.

Spool Up

Realistic/Fast

In reality 50s jet engines took some time to reach full thrust. This is simulated in Realistic Spool Up. With Fast Spool Up you get 100% thrust much quicker when 100% throttle is set. In fact, it is almost instantaneous. With Realistic Spool Up we also simulate some other properties of 50s jets. If you advance the throttle too quickly, all the fuel is not burnt in the combustion chamber and so some is burnt in the exhaust nozzle. You will see a rise in the exhaust gas temperature and some damage to the engine is caused. Spool Up is slower in these conditions.

Game

Weapons

Realistic/Unlimited

When the Unlimited Weapons option is selected the weapon stations will be automatically reloaded when they are emptied.

If the weapon selection is set to Realistic, the setting can be over-ridden in the 3D by using the reload cheat key Ctrl R .

Vulnerable to Fire

On/Off

When enabled you will be vulnerable to enemy fire.

Ground Collisions

On/Off

When enabled, collision with the ground will damage or destroy your aircraft.

Midair Collisions

On/Off

When enabled, collision with other objects will damage or destroy your aircraft.

Complex A.I. Pilots

On/Off

When enabled all aircraft are processed using the realistic flight model. When disabled, only the player's aircraft and his opponent are processed using the realistic flight model. Other aircraft are processed using a simpler model.

Accel Off

Tactical/Engage

This setting is relevant after using the time acceleration during the game. When the trigger is set to engage, your aircraft will drop back into real time when you are directly threatened and enemy aircraft can fire at you. If the trigger is set to tactical, then real time is reset much earlier in the encounter. This will give you time to engage the enemy at a tactical level and allow you to gain height or maneuver, so that you may be able to achieve tactical dominance.

Target Size

Low/Medium/High

Altering this setting affects the accuracy of your guns. The smaller the target size the more realistic the setting.

Autopilot Skill: UN

Autopilot Skill: Reds

Minimum/Low/Medium/High/Maximum

These refer to the AI settings of the computer pilots during Campaign missions. Each enemy pilot can have a different skill level. By selecting minimum, you will force the range of skills encountered to be low. Alternatively, selecting maximum will mean that the range of skills you encounter will be relatively high.

Preferences

Gun Sight Ranging

Manual/Perfect radar/Realistic radar

The purpose of the gun sight is to compute deflection for guns, bombs and rockets. When the current weapon selection is guns, the sight moves to show the predicted bullet position at the specified range. For other weapon selections, the sight is locked in position.

When Manual radar is selected, you will have to set the range manually as described below. With Perfect and Realistic radar the ranging is done automatically. If the Realistic option is selected, the gun sight lock can be broken when the aircraft is pointing at the ground.

MANUAL

The sight consists of a central dot inside a circle of diamond shaped dots.

You have to "dial in" the wingspan of the target aircraft. This is achieved by using [Q] to increase the wingspan and [W] to decrease it. The wingspan is shown on the wingspan adjustment wheel.

Maneuver your aircraft to get the target aircraft inside the sight.

Use [T] and [Y] to adjust the size of the sight so that it matches the wingspan of the target.

The range is shown on the sight range dial.

The predicted bullet position at the indicated range is shown by the position of the sight. You should track the target with the gun sight for a second before opening fire.

PERFECT/REALISTIC

The sight consists of a central dot inside a circle of diamond shaped dots.

When the target is within 1800yds, the radar target indicator light comes on. The sight range dial winds down as the range decreases.

Maneuver your aircraft to get the target aircraft inside the sight.

The predicted bullet position at the indicated range is shown by the position of the sight. You should track the target with the gun sight for a second before opening fire.

Note that the pilot does not have to dial in the target wingspan because the range is given by the radar. However it is good practice to "dial in" the target, just in case the radar goes un-operational at a vital time.

Views

Restricted Views

On/Off

The player is restricted to the cockpit view. This option is provided so that during a Multi-Player session all players are limited to the same view.

Peripheral Vision

On/Off

When Peripheral Vision is on you will see red or blue blobs at the edge of the screen. These represent aircraft that would be in the peripheral vision of a real pilot. The computer presents a much smaller field of view than human eye-sight.

Auto Padlock

On/Off

When on, and when inside padlock cockpit has been selected, the view will automatically change according to the position of the target. If the target is in front of the player, then the inside view is presented. Otherwise, the outside view is presented.

View Mode Select

Panning/Fixed View

This controls how the number pad arrow keys are used. Pressing a key will either produce a smooth pan to another view or a jump to a new view.

Padlock When Visible

On/Off

When on, padlocking is only possible when the target is in view. When off, the object has to be in visible range to be padlocked.

Camera Color

Monochrome/Color

The gun camera film can either be viewed in monochrome (realistic) or color.

Preferences

Info Line

Off/Flight info/View info

The info line, which is at the bottom of the screen when flying, can be in one of these three modes. If the info line is on then the last spoken radio message will also be displayed for a few seconds.

Units

Imperial/Metric

The selection determines how data is presented e.g.:

mph	Km/h
yards/feet	meters
lb	kg

Gun Camera

Off/Trigger/On

The gun camera can either be off all the time or on when the trigger is pressed or on all the time. When Trigger is selected, the camera is not switched off immediately the trigger is released. The amount of time that the trigger is left on after releasing the trigger depends on the ordnance selected. So for example, the camera is left on longer after a bomb release than when firing cannon/bullets. The [V] and [X] keys can over-ride this option.

Head Up Display

On/Off

Virtual threat indicator and artificial horizon instruments are available to help you to retain situational awareness during combat. These instruments are designed to compensate for the fact that in a simulation you do not get the same feedback during combat as a real pilot would. A real pilot has full peripheral vision and feels the effect of gravity.

Controls

MiG Alley uses the Windows joystick configuration. The sim can be played using the default options and so it is unnecessary to make any adjustments.

However the control options are provided to fine tune input to MiG Alley. The dialogue is in three parts:

Top	Details of available controllers detected by MiG Alley
Middle	How the controllers will be used
Bottom	Force Feedback and dead zone adjustment

Top

The combo-box lists the available controllers. The current controller is displayed.

Clicking on calibrate will take you to the Windows calibration program.

The current controller can be enabled/disabled using the Enable tick-box. Information about the current controller is displayed next to the Enable tick-box.

Middle

The middle section shows how the options of the enabled controllers will be used.

Stick:	Aileron and elevator.
Throttle:	Throttle control.
Rudder:	Rudder control.
View pan:	The control will be used to scroll the view horizontally.
View pitch:	The control will be used to scroll the view vertically.
Range:	Zoom in and out.
3D pointer:	This is used for the cockpit map and radio comms choices. If keyboard is chosen then the pointer is not displayed.

Bottom

The Force Feedback tick-box will be greyed out if the current controller is not capable of Force Feedback operation.

The following Force Feedback options are available:

Gun fire:	Vibration transmitted by the guns.
Buffet:	Vibration caused by the buffeting when in and around the stall condition and/or close to the speed of sound (Mach one).
Aerodynamic:	Stiffening of controls at high speed.
Airframe:	Vibrations transmitted through the airframe from the ground.

The size of the dead zones for the stick and rudder can be controlled independently.

The dead zone is the region at the center of the stick where no control input is provided to the aircraft. This option is available because it is sometimes easier to provide rudder input inadvertently with twist sticks and some sticks can give spurious readings around the dead zone.

You will need to find the best arrangement by trial and error.

Note: If you are using a 'Logitech Wingman Force' joystick, we recommend that you modify the 'Spring Effect Strength' on the Settings panel of the Game Controllers dialogue to 35%. This will prevent excessive stick stiffness and uncommanded vibration of the joystick.

Others

Music Volume

Minimum/Low/Medium/High/Maximum
This controls the volume of the background combat music played during flight.

3D SFX Volume

Minimum/Low/Medium/High/Maximum
This controls the volume of the sound effects in flight.

Control SFX Volume

Minimum/Low/Medium/High/Maximum
This controls the volume of the sound effects in the non-flying sections, e.g. buttons on the map screen.

Ambient SFX Volume

Off/Minimum/Low/Medium/High
This controls the volume of the ambient sound effects in the non-flying sections: e.g. the sound track on the Video footage.

Radio Chatter Volume

Off/Minimum/Low/Medium/High
This controls the volume of the radio chatter in the game.

Engine Volume

Off/Minimum/Low/Medium/High
This controls the volume of the engine noise.

Note: The 3D SFX volume is a master controller and will effect radio chatter and engine volumes.

G Effects

On/Off
When enabled, you will experience black outs when pulling excessive positive g-forces and red outs when flying excessive negative g.

Injury Effects

On/Off
When enabled you will black out when injured.

White Outs

On/Off
When enabled you will experience white outs when looking in the direction of the sun.

Auto Vectoring

On/Off
This is concerned with how the aircraft in your Group will react during combat when you are flying as the leader. When Auto Vectoring is on, the other pilots will determine how they should react automatically.

When Auto Vectoring is off, you will be offered choices. Rather than offering a huge array of possible actions, you are only offered a range that is sensible for the current situation.

Make a selection using either the number keys or the mouse pointer. If a choice is not made within a few seconds then the options are removed and the other pilots will make their own choices.

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Acknowledgements

Steve Owen	Manual Co-Author
Boots Blesse:	No Guts - No Glory Additional information including details about flying combat missions in a Sabre
Mark Hanna:	Advice on flight modeling, cockpit positioning, horizon and situational awareness instrumentation
Paddy Harbison:	Details about flying combat missions in a Sabre
Anton Maree:	Introduced us to some valuable research material: Paddy Harbison RAF report. NACA reports including wind tunnel tests of the Sabre engine. Aircraft visibility
Jim Tittle:	Aircraft Technical Advice
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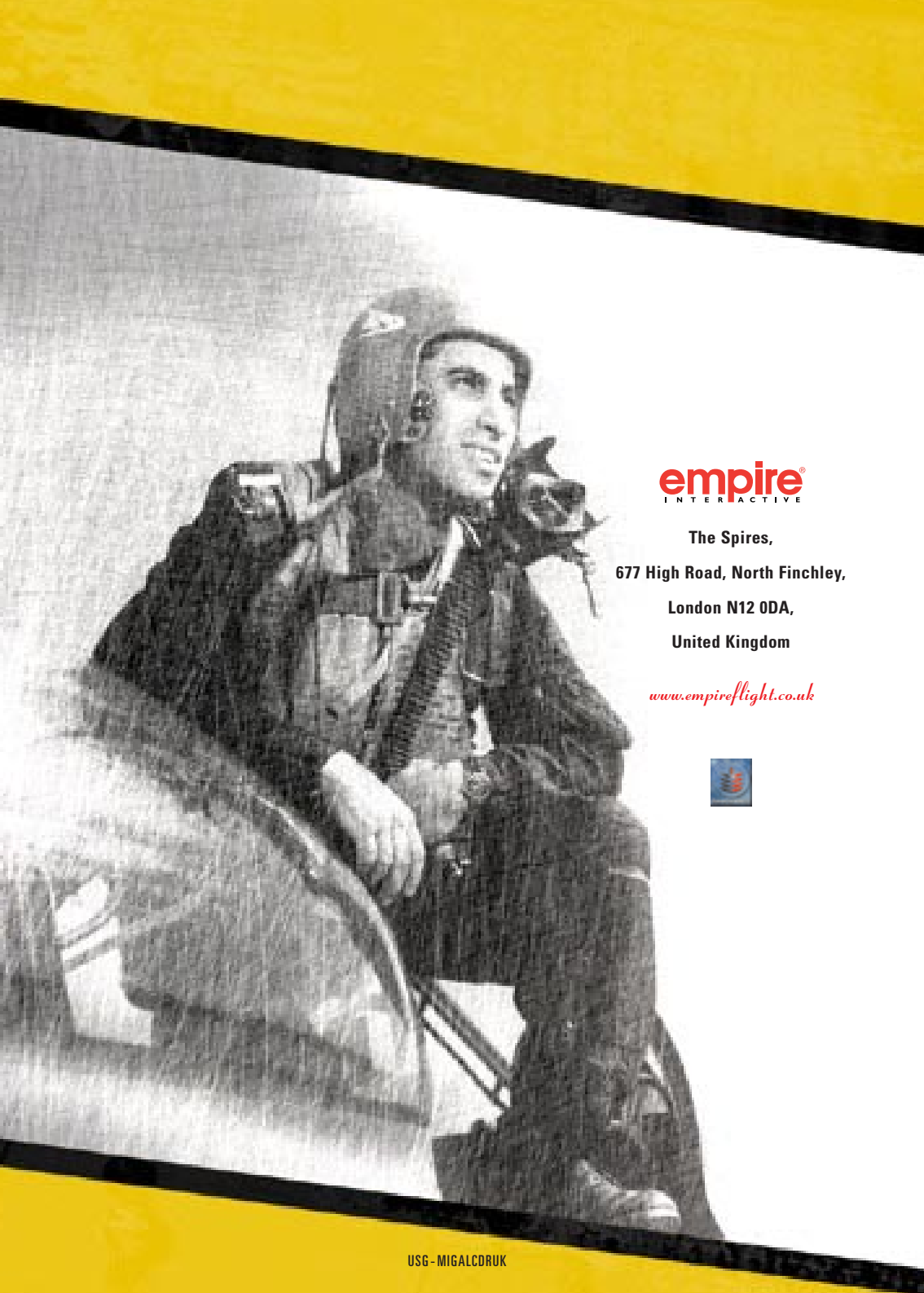
Film footage and still pictures from the USA National Archives

Secret RAF Report AIR 20/7728: original document held by Public Records Office, used by kind permission.



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